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MANAGEMENT SYSTEM ASSESSMENT VISIT REPORT

Visit Date(s):	September 30 - October 2, 2003
Company:	Koppers Inc.
Location(s):	Clairton, PA
LRQA Reference:	113346
Visit Type:	Stage 2
Assessment Standard(s):	ISO14001
Assessor(s):	S. Rowley
Report Date:	October 2, 2003

TEAM LEADER SIGNATURE	CUSTOMER ACCEPTANCE SIGNATURE	DATE
1686 S ROWLEY		October 3, 2003

F/USA/018/2

Koppers021079

LLOYD'S REGISTER QUALITY ASSURANCE

VISIT REPORT

NAME OF COMPANY	DATE
Koppers Inc.	September 30 - October 2, 2003
	REFERENCE NO. 113346

ATTACHMENTS

- ☒ Surveillance Program
- ☒ Improvement Note(s)
- ☐ Non-Conformity Notes(s)
- ☒ Certificate Details and Authorization
- ☐ Multi-Site/Location Details
- ☐ Change to Approval/ Customer Information
- ☒ Assessment Program
- ☐ Assessment Planning and Record
- ☐ Meeting Attendance

OTHER

Stage I Observation Log
Conformance Review
Summary and Recommendation

SCOPE

Production of Carbon Materials and Coal Tar Chemicals

CLAUSE EXCLUSIONS

None

SHIFTS AUDITED

First

LRQA OFFICE ACTION

Houston, TX

CONFIDENTIALITY STATEMENT

The contents of this report, together with any notes made during the assessment visit, will be treated with the strictest confidence and will not be disclosed to any third party without written consent of the customer, except as required by the accreditation authorities.

NAME OF COMPANY	DATE
Koppers Inc.	September 30 - October 2, 2003
	REFERENCE NO. 113346

VISIT DETAILS

Stage 2

INTRODUCTION

The following notes are provided in order to facilitate understanding of the contents and format of this report.

Findings which have been identified with "O", "I", or "N" in the right hand column indicate areas of weakness, concern, or non-conformance which require consideration and implementation of appropriate actions. All such findings will be formally followed up at subsequent visits and may be used to initiate audit trails. Text which has been identified with "LRQA" highlights information for the next LRQA assessor, and requires no action by the client.

Findings identified "O" are defined as Observations (see NOTE 1). These identify areas warranting attention by the organization, although not necessarily requiring remedial action.

Findings identified "I" are those which have, either individually or collectively, resulted in Improvement Notes being raised. These identify deficiencies which, if not addressed, could result in the system becoming ineffective or failing, and result in Non-Conformity Notes being raised during a subsequent visit. These findings should be read in conjunction with the relevant Improvement Note to which they will be cross-referenced.

Findings identified "N" indicate that requirements of the certification standard(s) are not being met and Non-Conformity Notes have been raised. These should be read in conjunction with the relevant Non-Conformity Note to which they will be cross-referenced.

Findings which have not been identified as "O", "I", or "N" may include statements of fact, positive observations, comments, suggestions, or supporting information recorded for the benefit of either the client or LRQA.

NOTE 1: For QS-9000 and ISO/TS 16949 visits, findings identified "O" indicate "Opportunities for Improvement", "I" that a "Minor Non-Conformity Note" has been raised, and "N" that a "Major Non-Conformity Note" has been raised.

IMPROVEMENT NOTE / NON-CONFORMITY NOTE SUMMARY (Enter Note Numbers)

STILL OUTSTANDING FROM PREVIOUS VISIT(S)	CLOSED DURING THIS VISIT	RAISED DURING THIS VISIT
NA	NA	10/03/01

EXECUTIVE SUMMARY AND RECOMMENDATION

The EMS at Koppers Inc., Clairton, PA conforms to the requirements of the ISO 14001:1996 EMS standard. Evidence demonstrating the implementation of the organization's environmental policies, objectives, targets, and programs has also been demonstrated. Therefore, based on the procedures and findings of this assessment, certification to the ISO 14001:1996 standard is recommended.

ASSESSOR DECLARATION

- ☒ YES ☐ NO LRQA HAS ACCREDITATION FOR ALL CERTIFICATES REQUESTED
- ☒ YES ☐ NO THE TEAM WAS ALLOCATED FOR ALL THE REQUIRED VISIT CODES
- ☒ YES ☐ NO ALL CLAUSES RELEVANT TO THIS VISIT AND THE APPLICABLE STANDARD WERE EXAMINED DURING THIS VISIT

IF 'NO', CONTACT OFFICE / MARK FOR OFFICE ACTION

CODES APPROPRIATE TO THIS SCOPE

NEXT VISIT DETAILS

- ☐ INITIAL ASSESSMENT/STAGE 2
- ☐ FOLLOW-UP
- ☐ SPECIAL SURVEILLANCE
- ☐ CHANGE TO APPROVAL
- ☐ PARTIAL / COMPLETE RE-ASSESSMENT
- ☐ DOC REVIEW / CERTIFICATE RENEWAL
- ☒ ROUTINE SURVEILLANCE
- ☐ CERTIFICATE RENEWAL

ASSESSOR(S) (if assigned)	LOCATION(S)	DURATION	DUE DATE
TBD	Clairton, PA	1	April 2004

NAME OF COMPANY	DATE
Koppers Inc.	September 30 - October 2, 2003
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ITEM	ACTIVITY / OBSERVATION	GRADE & REFERENCE
SGR/1	<u>EMS Changes/Developments Since Stage I</u> Developments and activities since the completion of the Stage I assessment include the following: - Ongoing negations with the City of Clairton and DEP with managing discharges from the Mendelssohn sewer, - The facility received and is in the process of negotiating a permit for the operation of a thermal oxidizer, - A security plan has been developed as per DOT requirements	
SGR/2	<u>Structure and Responsibility</u> There have not been any changes to EMS roles and responsibilities since the completion of the Stage I assessment.	
SGR/3	<u>Environmental Policy</u> The environmental policy remains unchanged and continues to be communicated to employees via postings and the "observations and contacts program". There have not been any external requests for the environmental policy.	
SGR/4	<u>Document Control</u> Document control is described in the local procedure 0150-1054 and QP-004. QP-004 was revised to provide for reviewing documentation a minimum of once every three years by "authorized personnel". The facility also prepared a "SHEMS Documentation Roadmap" pursuant to an improvement raised during the Stage I assessment. ***These additions/modifications to the document control procedures effectively addresses Improvement SGR/6.***	
SGR/5	It could be an improvement if it were more clearly stated who constituted the personnel authorized for periodically reviewing documentation (i.e., department supervisors, procedure author, document control officer, etc.). Also, the integrated contingency plan should be added to the Control Document Distribution list.	**O** **4.4.5**
SGR/6	<u>Environmental Aspects</u> Since the Stage I assessment, there have not been any changes to the environmental aspects data or which would prompt the management of change process.	

NAME OF COMPANY	DATE
Koppers Inc.	September 30 - October 2, 2003
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ITEM	ACTIVITY / OBSERVATION	GRADE & REFERENCE
SGR/7	**Legal and Other Requirements** The facility continues to stay abreast of new and changing regulations through a variety of means including corporate SH&E seminars and communication with CSG environmental staff assigned to the site. CSG also maintains a summary of federal regulations on the Koppers intranet site (KopNet) as an additional resource to the various facilities. There have not been any changes to the applicable requirements since the Stage I audit. The facility has received a permit for the operation of a thermal oxidizer. The facility appealed the permit and; therefore has not been added to the facility's list of applicable requirements. Pending regulations applicable to the site, which were discussed include the Pesticide Active Ingredient (PAI) NESHAP applicable at the end of the year and the boiler MACT (for solid fuel boilers<10mbtu) to be issued by the end of 2004. No deficiencies were noted.	
SGR/8	**Objectives, Targets and Programs** Objectives and targets have been established, which are consistent with corporate requirements. Specifically reviewed were the facility's tank management plan and the waste minimization plan. Objectives and targets have been established and are documented on the facility's CIP. Progress toward the attainment of objectives/targets was demonstrated.	
SGR/9	The waste minimization plan/source reduction strategy, should also address process wastewater.	**O** **4.3.4**
SGR/10	**Operational Controls/Contractor Management** Relevant EMS requirements are communicated to contractors and suppliers in accordance with the recently issued corporate policy, K-SHE-024. The procedure requires the communication of requirements via a standard letter format. Site-specific requirements are communicated via a "training" video and language incorporated into purchase orders. Records of training a tank contractor (EAP) performing work at the time of the assessment were complete.	
SGR/11	The recently developed corporate policy has been issued, but is not effective or fully implemented, i.e., issue of the Contractor Letter Template for suppliers and contractors. Evidence of its implementation will need to be verified at the next surveillance audit. Developing and implementing a local procedure to ensure the communication of specific requirements to contractors performing work onsite--establishing the frequency of such communication could be an improvement.	**I** **4.4.6**

NAME OF COMPANY	DATE / REFERENCE NO.
Koppers Inc.	DATE: September 30 - October 2, 2003 REFERENCE NO.: 113346

ITEM	ACTIVITY / OBSERVATION	GRADE & REFERENCE
SGR/12	**EMS Audits** The facility has conducted audits of the management system elements and all areas of the facility. An audit program and schedule has been developed, which provides for auditing the entire EMS and all areas of the facility against within a one-year time frame. The Clairton Plant has also developed a program and schedule for auditing all SJPs over a three-year time period. Audit reports are documented utilizing a standardized reporting format. Recent audits have included a more thorough account of the objective evidence reviewed to arrive at audit conclusions. Audit findings are addressed in accordance with the corrective action process. ***This observation addresses the improvement noted during the Stage I assessment.***	
SGR/13	**Corrective Actions** Nonconformance and corrective actions are addressed through the local procedure *Nonconformance, Corrective and Preventive Actions* (0150-1056). The procedure clearly outlines the responsibilities for identifying, reporting, and developing corrective and preventive actions, as well as for evaluating the root cause(s) of the nonconformances identified. A corrective action log has been prepared and is maintained in an Access database. Corrective actions are issued pursuant to second and third party audits, employee input, regulatory excursions, and/or environmental incidents. Corrective actions are reviewed for effectiveness in association with the management review process.	
SGR/14	**Management Review** Management reviews of the EMS are conducted on a quarterly basis, the results of which are documented using a standardized meeting format. A management review was conducted July 25, 2003, which covered all elements of the EMS, concluding the continued adequacy, suitability and effectiveness of the EMS.	
SGR/15	**Control Room** The Control Room operation was reviewed with T. Kacmarik. An awareness of the EMS was demonstrated including the policy and its basic commitments. The significant aspects, safety hazards, and risks associated with the Control Room operations were discussed and knowledge of the related control procedures demonstrated. Specifically discussed were procedures for monitoring the Mendelssohn Sewer Overflow, and SJPs for Tank Storage, Gas Blanketing, Debenzolation and Distillation. No deficiencies were noted.	

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ITEM	ACTIVITY / OBSERVATION	GRADE & REFERENCE
SGR/16	**Maintenance** The Maintenance operations were reviewed with J. Bizila, D. Cameron, and H. Donavan, and K. Suss. Specifically discussed were the process for calibrating equipment including scheduling and recording the results of such activities. Calibration records reviewed in the MP-2 Preventive Maintenance database were complete and up to date. Personnel interviewed demonstrated an awareness of the environmental aspects and hazards of their job functions and referenced procedures for LO/TO, confined space entry, hot work, HAZCOM, and emergency response. Also, employees were aware of the EMS and the basic commitments of the environmental policy.	
SGR/17	Calibration stickers on several pieces of equipment—level sensors and valve controls were not legible. Also, one automated control in the Control Room was labeled with the wrong calibration due date.	**O** **4.5.1**
SGR/18	**Laboratory** The laboratory operations were R. Kovacic and J. Bell. An awareness of the environmental aspects and safety hazards associated with the lab operation was demonstrated as well as a general understanding of the management system and the environmental policy. Inspections of the emergency showers and eye wash stations have been conducted and records of the inspections were complete and in order. The area was well maintained and overall no deficiencies were noted.	
SGR/21	It could also be an improvement if the container in which GC sample vials are deposited was labeled denoting its contents. Also, a drum outside the laboratory was noted without appropriate labeling.	**O** **4.4.6**
SGR/22	**Shipping** Shipping was reviewed with B. Theiss and R. Bell. An understanding of the procedures for offloading and loading product was both observed and described consistent with relevant procedures. An awareness of the procedures for responding to potential spills/releases was also described consistent with the emergency response procedures	
SGR/23	It could be an improvement if materials for containing/controlling potential spills were identified to ensure their availability in the event of a release.	**O** **4.4.7**
SGR/24	**Waste Management** Waste Management was reviewed with K. Probst. Records reviewed included weekly waste inspections, hazardous waste biennial waste report (reporting year 2001) and residual waste biennial waste report (reporting year 2002). The universal waste storage area, "Still House", and satellite storage areas at the "10-tank" and behind the laboratory were also reviewed.	

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ITEM	ACTIVITY / OBSERVATION	GRADE & REFERENCE
SGR/25	One roll-off outside the Still House containing recyclable, non-hazardous material and a waste container in the satellite storage were not labeled appropriately.	**O** **4.4.6**
SGR/26	**Storm Water Management** Storm water discharges are managed in accordance with a NPDES permit Mendelssohn sewer inspections conducted three times per week and recorded on *Mendelssohn Sewer Inspection Sheets*. Records reviewed were noted to be complete and in order. Routine sampling of the discharges are conducted as per an established schedule and reported on DMRs. PPC requirements stipulated in the permit are incorporated into the facility's *Integrated Contingency Plan*. No deficiencies were noted.	
SGR/27	**Air Management** The facility continues to operate under a Title V air permit application permit shield, pending the review and approval of their Title V air permit application. Recently, the facility received a permit for the operation of a thermal oxidizer. The permit established limits stricter than the federal limits as imposed by Allegheny County. 2002 Emission Inventory Statements and the Semiannual NESHAP reports were reviewed and found to be complete an in order.	
SGR/28	**Communication** Environmental communication is conducted as per the local procedure (0150-1051). Internally, environmental information is communicated through training, bulletin board postings, production meetings, an internal newsletter—KopNet, and a variety of other means. External communications, including the communication of Form R data and spill/releases, are facilitated through the *Community Advisory Panel*. Koppers has decided against processes for communicating its significant environmental aspects to the public and documented this decision in the *SH&E Management System Manual*. The facility 's local procedure states that external communication of environmental information is conducted only when authorized by top management or otherwise required by law. Recent regulatory contacts have been documented and records maintained.	

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ITEM	ACTIVITY / OBSERVATION	GRADE & REFERENCE
SGR/29	**Emergency Response** The facility currently maintains several contingency plans including an Environmental Emergency Response Plan and a separate Facility Response Plan for the barge-loading operation. An outside party recently prepared an Integrated Contingency Plan, which combines the various emergency response and contingency plans applicable to site operations. Spills are reported and investigated in accordance with the corporate *Environmental Incident and Communication Policy* (KLL-SHE-014). *Spill Evaluation Reports* are completed for all spills at the plant level using form SH&E-001. Reportable spills are communicated to the corporate office using the corporate *Regulatory Incident Report* form, SH&E-003. Spill incidents have been reported using the appropriate forms and records reviewed were complete and in order. Additional records reviewed included *72-hour Tank Inspection* forms (SH&E-006) and *Quarterly PCB Inspections* (SH&E-007).	
SGR/30	72-Hour Tank Inspection records were missing for several dates (August and July 2003).	**O** **4.4.6**
SGR/31	**Training** Training was reviewed with K. Probst, J. Bell, and J. Christafano. Local procedure *0150-1050, Training,* describes the local procedure for training. Regulatory training needs are identified and tracked with the use of *Training Needs Assessment* matrix. Training needs are identified for the various job classifications, and the training conducted in accordance with an established schedule as noted on the matrix. A training database is used to schedule and track the completion of the required training. SJP training is completed in accordance with the quality manuals for the tar plant, laboratory, and maintenance. Training records are maintained in a hard copy (class materials and sign-off sheets) by the SH&E Coordinator. Human Resources also maintain employee specific training records, certifications, etc. Training records reviewed for several employees were complete and in order. Competencies are verified through a variety of means including testing, qualifying, and ongoing through observations and contacts.	

LLOYD'S REGISTER QUALITY ASSURANCE

ISO 14001 CONFORMANCE REVIEW

NAME OF COMPANY	REFERENCE NO	DATES
Koppers Inc.	113346	September 30-October 2, 2003

CLAUSE	TITLE	Addressed		Conformity		NCN	IN	Observation Log Improvement Item(s)
		Yes	No	Yes	No			
4.1	**General Requirements**	✓		✓				
4.2	**Environmental Policy**	✓		✓				
4.3	**Planning**							
4.3.1	Environmental Aspects	✓		✓				
4.3.2	Legal & Other Requirements	✓		✓				
4.3.3	Objectives & Targets	✓		✓				
4.3.4	Management Programmes	✓		✓				
4.4	**Implementation & Operation**							
4.4.1	Structure & Responsibility	✓		✓				
4.4.2	Training, Awareness & Competence	✓		✓				
4.4.3	Communication	✓		✓				
4.4.4	Management System Documentation	✓		✓				
4.4.5	Document Control	✓		✓				
4.4.6	Operational Control	✓		✓				10/03/01
4.4.7	Emergency Preparedness & Response	✓		✓				
4.5	**Checking & Corrective Action**							
4.5.1	Monitoring & Measurement	✓		✓				
4.5.2	Non-Conf & Corrective & Preventive Action	✓		✓				
4.5.3	Records	✓		✓				
4.5.4	Management System Audit	✓		✓				
4.6	**Management Review**	✓		✓				

SIGNATURE (TEAM LEADER)	NAME	CUSTOMER SIGNATURE	DATE
1656 S ROWLEY	S. ROWLEY		October 2, 2003

F/USA/095E/0

Koppers021088

LLOYD'S REGISTER QUALITY ASSURANCE

IMPROVEMENT NOTE

NAME OF COMPANY	REFERENCE NO	DATE
Koppers Inc.	113346	October 2, 2003

AREA UNDER REVIEW	STANDARD AND CLAUSE NO.	NOTE NO. (mm/yy/nn)
Operational Control/Contractor Management	14001:1996, 4.4.6	10/03/01

IMPROVEMENT TOPIC

The recently developed corporate policy has not been officially issued or fully implemented, i.e., issue of the Contractor Letter Template for suppliers and contractors. Evidence of its implementation will need to be verified at the next surveillance audit. Developing and implementing a local procedure to ensure the communication of specific requirements to contractors performing work onsite--establishing the frequency of such communication could be an improvement.

ASSESSORS		ACCEPTED BY CUSTOMER
	1656 S ROWLEY	

CORRECTIVE ACTION VERIFIED (TO BE COMPLETED BY LRQA)

CORRECTIVE ACTION COMPLETED

CORRECTIVE ACTION COMPLETED SATISFACTORILY AND IMPROVEMENT NOTE WITHDRAWN	ASSESSOR SIGNATURE	DATE

F/USA/080/1

LLOYD'S REGISTER QUALITY ASSURANCE

SUMMARY AND RECOMMENDATION

NAME OF COMPANY	REFERENCE NO.
Koppers Inc.	113346

TYPE OF VISIT / APPROVAL

☒ INITIAL APPROVAL ☐ FOLLOW-UP ☐ PARTIAL RE-ASSESSMENT ☐ COMPLETE RE-ASSESSMENT

☐ ROUTINE SURVEILLANCE ☐ SPECIAL SURVEILLANCE ☐ OTHER (SPECIFY)

CERTIFICATE RENEWAL WITH ☐ MAJOR CHANGE ☐ MINOR OR NO CHANGE

CHANGE TO APPROVAL WITH ☐ MAJOR CHANGE ☐ MINOR CHANGE

DETAILS OF SUPPORTING VISITS (IF INITIAL ASSESSMENT, CERTIFICATE RENEWAL, OR CHANGE TO APPROVAL ONLY)

DOCUMENT REVIEW AND PLANNING VISIT (OR SYSTEM APPRAISAL VISIT)	INITIAL ASSESSMENT, CERTIFICATE RENEWAL OR CHANGE TO APPROVAL VISIT	FOLLOW-UP OR REASSESSMENT VISIT
TEAM S. Rowley	TEAM S. Rowley	TEAM TBD
DATE(S) 15-16 July 2003	DATE(S) September 30-October 2, 2003	DATE(S) April 2004

EXECUTIVE SUMMARY AND RECOMMENDATION

The EMS at Koppers Inc., Clairton, PA conforms to the requirements of the ISO 14001:1996 EMS standard. Evidence demonstrating the implementation of the organization's environmental policies, objectives, targets, and programs has also been demonstrated. Therefore, based on the procedures and findings of this assessment, certification to the ISO 14001:1996 standard is recommended.

IMPROVEMENT NOTE / NON-CONFORMITY NOTE SUMMARY (ENTER REFERENCE NUMBERS)

OUTSTANDING FROM PREVIOUS VISIT(S)	CLEARED DURING THIS VISIT:
None	NA

RAISED DURING THIS VISIT:
10/03/01

NEXT VISIT DETAILS

☐ FOLLOW-UP ☐ PARTIAL RE-ASSESSMENT ☐ COMPLETE RE-ASSESSMENT ☒ ROUTINE SURVEILLANCE

☐ SPECIAL SURVEILLANCE ☐ CHANGE TO APPROVAL ☐ DOCUMENT REVIEW / CERTIFICATE RENEWAL PLANNING ☐ CERTIFICATE RENEWAL

ASSESSORS (IF ASSIGNED)	LOCATIONS	DURATION	DUE DATE
TBD	Clairton, PA	1-day	April 2004

ASSESSOR DECLARATION

I HEREBY CERTIFY THAT ALL CLAUSES OF THE APPLICABLE STANDARD(S) WERE EXAMINED DURING THE ASSESSMENT / SURVEILLANCE / RENEWAL / RE-ASSESSMENT.

I ALSO CONFIRM THAT:

☒ *ACTIVITY CODING FOR THE SCOPE OF APPROVAL IS CORRECT*

☒ *THE TEAM WAS ALLOCATED ALL THE REQUIRED CODES*

☒ *LRQA HAS ACCREDITATION FOR ALL THE CERTIFICATES REQUESTED OR ISSUED*

SIGNATURE (TEAM LEADER)	NAME	DATE
1656 S ROWLEY	Steven Rowley	October 2, 2003

F/USA/009/1

LLOYD'S REGISTER QUALITY ASSURANCE

CERTIFICATE DETAILS & AUTHORIZATION

NAME OF COMPANY (AS IT WILL APPEAR ON THE CERTIFICATE)	REFERENCE NO.
Koppers Inc.	113346

LOCATION

FOR ISO CERTIFICATES: PLANT OR SITE NAME (IF APPLICABLE); TOWN / CITY; STATE / PROVINCE; COUNTRY
FOR QS-9000 CERTIFICATES / STATEMENTS OF COMPLIANCE: FULL ADDRESS INCLUDING ZIP / POSTAL CODE

SITE NAME The Clairton Plant
ADDRESS 300 N. Kevin Probst

CITY Clairton STATE PA ZIP 15025 COUNTRY USA

TYPE OF CERTIFICATE REQUIRED (TICK ONE BOX ONLY)

- ☒ SINGLE CERTIFICATE (SINGLE LOCATION)
- ☐ STATEMENT OF COMPLIANCE
- ☐ SINGLE CERTIFICATE (MULTI-LOCATION) SEE OVERLEAF FOR DETAILS OF ADDITIONAL LOCATIONS
- ☐ SEPARATE CERTIFICATE FOR EACH LOCATION (SEPARATE FORM TO BE COMPLETED FOR EACH)
- ☐ MULTI-SITE OR MULTI-LOCATION CERTIFICATE WITH CERTIFICATE SCHEDULE

STANDARDS (CERTIFICATE WILL INCLUDE ALL STANDARDS TICKED OR REFERENCED)

☐ 9001 ☐ 9002 ☒ 14001 ☐ ISO ☐ ANSI / ASQC ☐ TickIT ☐ AS 9000 ☐ TS 167 ☐ QS-9000

OTHER STANDARDS: None

OTHER CRITERIA: No

SCOPE: PLEASE PRINT CLEARLY AND INCLUDE ACCENTS AND PUNCTUATION. PLEASE ALSO HIGHLIGHT SPECIFIC REQUIREMENTS FOR UPPER OR LOWER CASE LETTERS (e.g. PVCu. TIG). ADDITIONAL SPACE IS AVAILABLE ON PAGE 2 IF REQUIRED.

Production of Carbon Materials and Coal Tar Chemicals

ACCREDITATION AND NUMBER OF CERTIFICATES REQUESTED

UKAS	RvA	DAR	JAS/ANZ	RAB	SCC	Other	CERTIFICATE EXPIRY DATE
				2			September 30, 2006

LOGO ARTWORK / GUIDELINES REQUIRED

☐ ARTWORK ☐ PC DISK ☐ GUIDELINES ☐ OTHER SPECIAL REQUIREMENTS: PLEASE STATE ON PAGE 2

ASSESSOR SIGNATURE

TEAM LEADER	NAME	DATE
1656 S ROWLEY	Steven Rowley	October 2, 2003

CUSTOMER ACCEPTANCE: THE DETAILS AS WRITTEN ABOVE WILL BE REPRODUCED ONTO THE CERTIFICATE(S) OF APPROVAL. *I CONFIRM THAT THE ABOVE DETAILS ARE CORRECT AND ACCEPTABLE, AND ACCEPT THE COSTS OF MULTIPLE ACCREDITATION AND/OR EXTRA CERTIFICATES. IN SIGNING BELOW ON BEHALF OF THE ORGANIZATION I COMMIT TO CORRECT ALL OUTSTANDING IMPROVEMENT NOTES IN A TIMELY MANNER.*

SIGNATURE	POSITION	DATE
[signature]	Regional Plant Manager	October 2, 2003

APPROVAL AUTHORIZATION: (LRQA OFFICE USE ONLY) *I HEREBY CERTIFY THAT I HAVE REVIEWED THE RECOMMENDATION, AND THAT THE APPROVAL / CHANGE TO APPROVAL / CERTIFICATE RENEWAL IS DULY AUTHORISED.*

SIGNATURE	NAME	DATE

LLOYD'S REGISTER QUALITY ASSURANCE

CERTIFICATE DETAILS & AUTHORIZATION

ADDITIONAL LOCATIONS (FOR SINGLE CERTIFICATE ONLY) NOT APPLICABLE TO QS-9000

PLANT OR SITE NAME

CITY STATE / PROVINCE COUNTRY

PLANT OR SITE NAME

CITY STATE / PROVINCE COUNTRY

PLANT OR SITE NAME

CITY STATE / PROVINCE COUNTRY

PLANT OR SITE NAME

CITY STATE / PROVINCE COUNTRY

SCOPE (CONTINUED)

REMARKS OR SPECIAL INSTRUCTIONS

LLOYD'S REGISTER QUALITY ASSURANCE

SURVEILLANCE PROGRAM

NAME OF COMPANY	REFERENCE NO.
Koppers Inc.	113346
MAIN LOCATIONS	STANDARD
Clairton, PA	ISO14001

SURVEILLANCE PROGRAM

MANAGEMENT SYSTEM ELEMENTS TO BE EXAMINED AT EVERY SURVEILLANCE VISIT

	SECTOR / SCHEME SPECIFIC ELEMENTS
SYSTEM CHANGES SINCE LAST VISIT	
ORGANIZATION & RESPONSIBILITIES	
ENVIRONMENTAL POLICY	
MANAGEMENT REVIEW	
ENVIRONMENTAL AUDITS	
COMMUNICATIONS	
CORRECTIVE ACTION	
ENVIRONMENTAL ASPECTS	
LEGAL & REGULATORY REQUIREMENTS	
OBJECTIVES & TARGETS	
MANAGEMENT PROGRAMS	
USE OF LOGOS	* Certificate Renewal Planning Visit (If Applicable) ** Certificate Renewal Visit (If Applicable)

SCHEDULED VISITS (mm/yyyy)	4/2003	10/2003	4/2004	10/2004	4/2006	10/2006
ACTUAL DATES IF BOOKED IN ADVANCE (mm/dd/yyyy)						
LOCATIONS / DEPARTMENTS / SITES	CHECK WHEN TARGETED FOR REVIEW					
Operations	X					
Shipping						
Laboratory						
Maintenance						
Air Management						
Waste Management	X					
Stormwater Management						
Supplier/Contractor Management	X					
Training						
OFFICE ACTION REQUIRED (MARK AS APPROPRIATE)	☐ Yes ☒ No	☐ Yes ☐ No	☐ Yes ☐ No	☐ Yes ☐ No	☐ Yes ☐ No	☐ Yes ☐ No

FOR FURTHER LOCATIONS/ DEPARTMENTS / SITES AND REMARKS SEE OVERLEAF

DATE OF ISSUE	DATE OF PREVIOUS ISSUE	ASSESSOR NAME / SIGNATURE
October 2, 2003		1686 S ROWLEY

SCHEDULED VISITS (mm/yyyy)	4/2003	10/2003	4/2004	10/2004	4/2006	10/2006
ACTUAL DATES IF BOOKED IN ADVANCE (mm/dd/yyyy)						
LOCATIONS / DEPARTMENTS / SITES	CHECK WHEN TARGETED FOR REVIEW					
Emergency Reponse						

REMARKS

Surveillance

Report for:

Koppers Inc.

LRQA reference:	UQA 0113350/ 0101
Assessment dates:	16-17 January 2006
Assessment location:	Portland OR USA
Assessment criteria:	ISO 14001:2004
Assessment team:	Robert Clifford, Jr.
LRQA office:	Houston

LRQA, Inc., 1401 Enclave Parkway, Houston, TX 77077,

Telephone: 281-398-7370
Fax: 281-398-7337

LLOYD'S REGISTER QUALITY ASSURANCE

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Attachments

1. ISO 14001:2004 Transition Checklist

This report was presented to and accepted by:

Name: Mr. T.J. Turner

Job title: General Foreman / SH&E Coordinator

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1. Executive report

Assessment outcome:

On the basis of the evidence collected during this surveillance, and subject to the limitations of sampling, the environmental management system at Koppers Inc., Northwest Terminal (NWT) in Portland OR USA has been implemented in conformance to the requirements of the revised standard, ISO 14001:2004. Amendment of the certificate is recommended. There were no non-conformity's identified during this assessment.

System effectiveness and continual improvement:

The meticulous maintenance of the documentation and associated records are key elements of the management system at NWT. It has allowed the system to be useful in new hire induction and training. It also helps to ensure employees can refer to procedural requirements when needed so as to maintain compliance – the goal for system effectiveness at NWT. Continual improvement of the system is typically effected through audits and corrective actions, however, and these elements have not been exercised since the baseline assessment in January 2005 and the certification in March.

Areas for management attention:

The internal audits in CY2006 will be the first involving local auditors and should be approached diligently. Additionally, the annual SOP reviews will need to done as documented audits. This will be a challenge in that they must be well documented, as required by the standard, but not represent an undue burden to the facility over what was being done before. It is hoped also that time to participate in the *ECHO* meetings, a proactive external communication step, can be found because Kopper's *Manual* encourages facilities to participate in the community through *LEPC's, CAP's* etc.

2. Assessment details

Introduction:

This was the 1st surveillance at the Koppers Inc. Northwest Terminal (NWT) and included a transition to the revised standard, ISO 14001:2004.

Assessor: R. Clifford, Jr.

Process: Management of Change; Management Review; Continual Improvement; Use of Logos

Auditee(s): A. Kamerer, T.J. Turner, T. Self (CSG)

What we looked at:

Facility-level change management, the conduct of annual management review (evidentiary records are the *Management Review Planning/Implementation Template,* the commitment to improve the system.

What we found:

No changes to operations or management structure. Of the operational or physical changes noted in sect. 4.3.5 (b) (7) of the *Manual,* the following have had SH&E implications at Koppers NWT since the last visit in March: the new security gate; tank movement coupling; and the fall protection program. Each of these resulted in revision to SOPs. Several other revisions to SOPs were noted to have occurred since the last visit. Of note also, one employee was added in June raising the number of employees from two to three. The EMS documentation was stated to have been beneficial in training of the new employee.

The top level *Safety, Health and Environmental Management System Manual* (the *Manual)* will be revision 4 (47 pp.) and appears responsive to the revised standard, affirming that key changes to the standard will be implemented by Koppers. As Koppers believe its current EMS is largely responsive to the requirements of the revised standard, the effective date is set at 5/1/06 (just prior to the 5/15/06 expiration of certificates to the 1996 standard).

The most recent management review was 16 December 2005. The record indicated attendance by the management team, consideration of all required inputs (these inputs now also stipulated in the revised *Manual,* sect. 4.6), an assessment of suitability, adequacy and effectiveness and a reporting-out of action items.

The LRQA logo is displayed appropriately on a banner at the entry gate.

Related entries in the assessment findings log:

None

Process: Internal Audits; Corrective Action **Auditee(s):** N/A

What we looked at:

Status of the internal audit program, corrective actions.

What we found:

No audits or corrective actions since the March visit (aside the LRQA Stage 2 findings, which were entered onto the *Corrective Action Log NWT-PROG-024).* As the *Manual* requires annual audits and the last was the baseline audit done in January 2005, a schedule for year 2006 audits (*Audit Schedule Form – ISO 14001*, 6 pp.) has been developed to cover each element of the standard.

Absent from the schedule was any indication of when the SOP's, e.g. the various *–ADMIN, -MAINT, -PROD* procedures, would be audited. Our OFI from the Stage 2 is reiterated as RC – the annual "reviews / audits" of these SOPs *must* be documented, per the standard, in order for them to be accounted for as audits. The form of this documentation (whether Koppers uses an audit form, *observation,* marked-up copy, etc.) is largely immaterial – in whatever form it is it should clearly and thoroughly indicate what was audited, how, and what were the results.

Related entries in the assessment findings log:

RC 0503RFC003

Process: Policy; Objectives and Programs **Auditee(s):** N/A

What we looked at:

The status of policy and objectives. Also, re-visited the status of the program for 20% reduction (by year-end) in tank residues.

What we found:

No change to policy. To meet the revised requirement that it be communicated to on-site contractors it was noted that this is done through posting in the main office.

CY 2006 corporate environmental objectives have been set: (1) analyze any exceedence of 80% of NPDES limits; (2) documented review and update of storm-water plans; (3) zero operational hazardous waste; (4) 20% tank residue reduction; and (5) implement EMIS reporting. The status of these at NWT is: (1) analysis will be done on an as-needed basis, as limits exist for phenol, oil & grease, and will be recorded on an *Incident Investigation* format; (2) not applicable at NWT as they have no BMPs; (3) the *Waste Minimization Plan for 2006, NWT-PROG-002* was updated 12 January and calls for annual waste minimization training and *action plan* development; (4) reportedly not applicable at NWT – confirming documentation was received in a 17January 2006 e-mail from division's Jim Dietz (1 pp.); and (5) this was initiated 1 January 2006 and should be assessed at the next surveillance.

Related entries in the assessment findings log:

None

Process: Environmental Aspects; Legal Requirements and Compliance Evaluation

Auditee(s): N/A

What we looked at:

Aspects are listed on the *Continuous Improvement Plan (CIP)* spreadsheet while legal requirements appear on the *Reporting Requirements 2005* (1 pp.). Periodic compliance evaluations are done biennially by an independent third-party.

What we found:

Annual revision to the corporate *CIP* and local *Reporting Requirements* has been done – the local *CIP NWT-PROG-013* will be revised by 27 January 2006. No significant changes to these documents were noted except for the new slate of corporate EH&S objectives. To address the requirement of the revised standard that calls for determining how legal requirements apply to environmental aspects, the revised *Manual* calls for this to be done on the *CIP*. For Koppers NWT, the *CIP* does link most legal requirements with aspects (legal requirements being listed under the *plant objectives and targets* and *monitoring and measuring* columns). Other tie-ins exist, however, and include the *Reporting Requirements* (where legal requirements are tied into *media,* which loosely ties into aspects) and the *Determination of Significance* matrix (under *legal and other status* the laws, under which legal requirements are established, are listed).

The most recent biennial compliance audit was conducted in December 2004 by *KU Resources, Inc.* Another is scheduled for June 2006 and should be assessed at the next surveillance. The revised standard calls for audits of "other requirements". At Koppers NWT there are only two – attendance at the *ECHO* meetings and an annual submittal of *NWN site data for ODEQ from Hahn*. Verification (audits) that these "other requirements" have been met would occur on the *Reporting Requirements* matrix.

Related entries in the assessment findings log:

LRQA 0601RFC001

Process: Communications; Emergency Preparedness **Auditee(s):** N/A

What we looked at:

The continuance of internal and external communication processes. Also looked at testing and review of emergency preparedness procedures. Relevant procedures include local security (*NWT-ADMIN-001,* last reviewed 14Apr05*), SPCC* (*NWT-PROG-023,* last reviewed 22Jun04 but due for revision 17Feb06), and the *Operations Manual* and *Oil Spill Plan* of *Pacific Terminal Services (*these dated Feb00 and Sep01*)*. As annual review of these plans is required per the *Manual* and, based on the evidence cited above, has been done.

What we found:

Key internal communication processes continue, notably the day-to-day communication between the facility and CSG, the more formal *EMIS* uploads, and the monthly, internal *SH&E Team Meetings,* the last on 29 December 2005 – evidence: 2 pp. minutes and sign-in. For external communications, workload has not allowed for the planned semi-annual attendance at the local *ECHO* meetings; however, Koppers NWT intends to remain on the mailing list and attend, when it can, the monthly meetings.

No incidents or emergency situations, which would then warrant review of the plans, have occurred since the last visit. An evacuation drill was done in December – evidence: statements regarding the nature of the drill and item D(1) in the *SH&E Team Meeting.* In going forward, Koppers NWT should test other emergency scenarios. Noted that the 2006 corporate schedule for *table-top* and *functional drills* has not yet been released.

Related entries in the assessment findings log:

None

Process: Offices; Laboratory **Auditee(s):** T.J. Turner

What we looked at:

Visited Building #1, office and lab, to assess management of aspects: sanitary and storm water, universal waste, resource consumption and flammables/combustibles. Assessed also document control and record management and calibration.

What we found:

Aspects appeared well managed – noted that flammable storage was well organized and appeared compliant. User manuals and log books for monitoring equipment have been added to the document control list (finding OFI 0503RFC001 from the last surveillance). Noted one other omission – the *NWNG lease agreement*, as cited in the *CIP*; however, a copy of it was readily located and added to the document control process during this surveillance. Records appeared very well managed in terms of organization and labelling – observed filing cabinets #4 and #5 containing regulatory, training, and inspection records among others. pH meter calibration records were observed (per *NWT-PROD-029)* – noted that, for the two-point calibration, the readings are recorded prior to calibrating the unit – this is a good practice.

Related entries in the assessment findings log:

None

Process: ISO 14001:2004 Transition **Auditee(s):** A. Kamerer, T.J. Turner, T. Self

What we looked at:

Conformance with the requirements of the revised standard. The *1. ISO 14001:2004 Transition Checklist* was completed and is attached to this report.

What we found:

As noted, revision 4 of the *Manual*, effective 1 May 2006, appears responsive to the requirements of the revised standard (see *ISO 14001 Transition Checklist* attached to this report).

Some key checks:

4.5.1 ... show how legal requirements apply to environmental aspects: as required in the revised *Manual*, the *CIP* documents the air and water permit requirements applicable to various aspects. The other legal requirements for contingency plans (i.e. SPCC) and reporting (Tier II, Form R, etc.) appear on the *CIP* and tie-in to the *media* categories of aspects through the *Reporting Requirements* matrix.

4.4.2 ... ensure competency of those who work on behalf of the organization: the previous revision to the *Manual* had required, in 4.4.2 (c) that *...facility personnel ... must ensure that any contractor's employees demonstrate the appropriate training and competence.* To accomplish this, Koppers NWT has in the past requested copies of certifications, licenses from resident contractors (high-voltage electrical, boiler maintenance, drivers, tank cleaners) – evidence: reviewed copies of current *Boiler Class 1, General Journeyman electrician* licenses and, for tank cleaners, a full package of *compliance qualifications*; Koppers revised *K-SHE-024* will now require completion of a *Contractor Qualifications* form soliciting such training, education or experience information from the contractor, along with evidentiary records. Key to this revised procedure, as was a key to meeting 4.4.2 (c), is that the *project manager* will need to evaluate the *appropriateness* of the submitted information in order to ensure that competency is being demonstrated by the contractor.

Related entries in the assessment findings log:

None

Process: LRQA AUDIT NOTES **Auditee(s):** N/A

What we looked at:

16 Jan: 1:00 pm Opening Meeting; 5:00 pm LRQA Departure
17 Jan: 8:00 am LRQA Arrival; 3:00 pm Closing Meeting
Guides: A. Kemerer, T.J. Turner; T. Self

What we found:

N/A

Related entries in the assessment findings log:

None

3. Assessment Findings Log - ISO 14001:2004

Grade 1	Status 2	Finding 3	Corrective action review 4	Process / Aspect 5	Date 6	Ref 7	Clause 8
RC	Open	Audit checklists, listing requirements and objective evidence of implementation, should be completed and maintained as audit records for all audits including audits of SOPs.	Koppers NWT is committed to annual "reviews" of SOPs, but does not document these. Per the standard, these reviews, if they are to count as audits of the SOPs, must be documented. The form of the documentation (e.g. a marked-up copy of the SOP) need not be formal but must indicate what was audited, how (in some degree of detail) and what were the results found.	Internal Audits / SOPs	23 Mar 05	0503RFC003	4.5.5
xLRQA	New	The next bienniel compliance evaluation is scheduled for June 2006 and should be assessed at the next surveillance.	Not required	Compliance Evaluation	17 Jan 06	0601RFC001	4.5.2

Koppers021106

1. Grading of the finding * 2. New, Open, Closed 3. Description of the LRQA finding 4. Review by LRQA 5. Process, aspect, department or theme
6. Date of the finding 7. YYMM<Initials>seq.# 8. Clause of the applicable standard

* Major NC = Major nonconformity Minor NC = Minor nonconformity RC = Requires correction SFI = Scope for improvement xLRQA = Issue for follow-up by LRQA at next visit

Table 3 - Summary of Historical Analytical Results for Groundwater Samples: Priority Pollutant Metals by EPA Methods 6010, 200.7 and/or 7000 Series
Koppers Industries, Inc. Coal Tar Pitch Monitoring Program
NW Natural - Gasco Facility
Portland, Oregon

Project No. 2708

Priority Pollutant Metals by EPA Methods 6010, 7000, and 200 Series				Analytical Results mg/l (ppm)																			
Well Number	HAI Sample Number [1]	Chain of Custody Number	Sample Date	Antimony	Arsenic	Dissolved Arsenic	Beryllium	Cadmium	Dissolved Cadmium	Chromium	Dissolved Chromium	Copper	Dissolved Copper	Lead	Dissolved Lead	Mercury	Nickel	Dissolved Nickel	Selenium	Silver	Thallium	Zinc	Dissolved Zinc
MW-14-110	981116-MW14-110-06	2708-W037	16-Nov-98		0.012					ND[c]		ND[c]		ND[c]			ND[c]					ND[c]	
	990216-MW14-110-005	2708-W042	16-Feb-99		0.013					ND[c]		ND[c]		ND[c]			ND[c]					0.03	
	990512-MW14-110-09	2708-W045	12-May-99		0.012					ND[c]		ND[c]		ND[c]			ND[c]					ND[c]	
	990823-MW14-110-06	2708-W049	23-Aug-99		0.011					ND[c]		ND[c]		ND[c]			ND[c]					ND[d]	
	991027-MW14-110-09	2708-W055	27-Oct-99		0.01					ND[c]		ND[c]		ND[c]			ND[c]					ND[c]	
	991027-MW14-110-10	2708-W055	27-Oct-99		0.01					ND[c]		ND[c]		ND[c]			ND[c]					0.0054	
	000329-MW14-110-109	2708-W060	29-Mar-00		0.012					ND[c]		ND[c]		ND[c]			ND[c]					0.0107	
	000329-MW14-110-110	2708-W060	29-Mar-00		0.012					ND[c]		ND[c]		ND[c]			ND[c]					ND[c]	
	000615-MW14-110-102	2708-W064	15-Jun-00		0.014					ND[c]		ND[c]		ND[c]			ND[c]					ND[c]	
	001005-MW14-110-06	2708-W066	5-Oct-00		0.041					ND[c]		ND[c]		ND[c]			ND[c]					ND[c]	
	001220-MW14-110-102	2708-W068	20-Dec-00		0.013					ND[c]		ND[c]		ND[c]			ND[c]					ND[c]	
	010328-MW14-110-108	2708-W071	28-Mar-01		0.013					ND[c]		ND[c]		ND[c]			ND[c]					ND[c]	
	011009-MW14-110-105	2708-W075	9-Oct-01		ND[c]					ND[c]		ND[c]		ND[c]			ND[c]					ND[d]	
	011213-MW14-110-101	2708-W077	13-Dec-01		ND[d]					ND[c]		ND[c]		ND[c]			ND[c]					0.0104	
	020404-MW14-110-108	0204075-05A	4-Apr-02		0.01					ND[c]		ND[c]		ND[c]			ND[c]					ND[c]	
	020711-MW14-110-101	-	11-Jul-02		ND[c]					ND[c]		ND[c]		ND[c]			ND[c]					ND[c]	
MW-15-50	991029-MW15-50-25	2708-W057	29-Oct-99		0.011					ND[c]		ND[c]		ND[c]			ND[c]					0.0096	
	000403-MW15-50-125	2708-W062	3-Apr-00		ND[c]					ND[c]		ND[c]		ND[c]			ND[c]					0.0202	
	000615-MW15-50-105	2708-W064	15-Jun-00		ND[c]					0.006		ND[c]		ND[c]			0.0064					0.0359	
	000615-MW15-50-106	2708-W064	15-Jun-00		ND[c]					ND[c]		ND[c]		ND[c]			ND[c]					0.0388	
	001005-MW15-50-14	2708-W066	5-Oct-00		0.0054					0.0176		0.0081		ND[c]			0.0121					0.0393	
	001221-MW15-50-105	2708-W069	21-Dec-00		0.0134					0.0585		0.0188		0.011			0.042					0.0272	
	001221-MW15-50-106	2708-W069	21-Dec-00		0.0123					0.0193		0.0402		0.0125			0.0306					0.0334	
	010330-MW15-50-124	2708-W073	30-Mar-01		0.0098					0.0058		ND[c]		ND[c]			0.0067					0.0107	
	011010-MW15-50-111	2708-W076	10-Oct-01		ND[c]					ND[f]		0.0063		ND[c]			ND[h]					0.0646	
	011010-MW15-50-112	2708-W076	10-Oct-01		ND[c]					ND[f]		0.004		ND[c]			ND[h]					0.0412	
	011214-MW15-50-104	2708-W078	14-Dec-01		ND[d]					ND[c]		ND[c]		ND[c]			ND[c]					0.0089	
	011214-MW15-50-105	2708-W078	14-Dec-01		ND[d]					ND[c]		ND[c]		ND[c]			0.011					0.0084	
	020405-MW15-50-119	0204090-07A	5-Apr-02		0.006					ND[c]		ND[c]		ND[c]			ND[c]					0.0204	
	020711-MW15-50-104	-	11-Jul-02		0.0118					0.0187		0.0183		0.0154			0.0228					0.0929	
	020711-MW15-50-104	-	11-Jul-02		0.0103					0.0189		0.0219		0.0166			0.0232					0.0972	
MW-15-66	991026-MW15-66-07	2708-W054	26-Oct-99		ND[c]					ND[c]		ND[c]		ND[c]			ND[c]					ND[c]	
	000329-MW15-66-108	2708-W060	29-Mar-00		ND[c]					ND[c]		ND[c]		ND[c]			ND[c]					ND[c]	
	000615-MW15-50-104	2708-W064	15-Jun-00		0.005					ND[c]		ND[c]		ND[c]			ND[c]					0.0214	
	001005-MW15-66-08	2708-W066	5-Oct-00		ND[c]					ND[c]		ND[c]		ND[c]			ND[c]					ND[c]	
	001221-MW15-66-104	2708-W069	21-Dec-00		0.0055					ND[c]		ND[c]		ND[c]			ND[c]					ND[c]	
	010328-MW15-66-107	2708-W071	28-Mar-01		0.0066					ND[c]		ND[c]		ND[c]			ND[c]					ND[c]	
	011010-MW15-66-110	2708-W076	10-Oct-01		ND[c]					ND[f]		ND[g]		ND[c]			ND[h]					0.0241	
	011213-MW15-66-103	2708-W077	13-Dec-01		ND[d]					ND[c]		ND[c]		ND[c]			ND[c]					0.0133	
	020404-MW15-66-107	0204075-04A	4-Apr-02		ND[c]					ND[c]		ND[c]		ND[c]			ND[c]					ND[c]	
	020711-MW15-66-103	-	11-Jul-02							ND[c]		ND[c]		ND[c]			ND[c]					ND[c]	

Note: EPA = U.S. Environmental Protection Agency
mg/l = milligrams/liter
ND = not detected above detection limit indicated

1 = Sample number prefix: 2708-

ODEQ = Oregon Department of Environmental Quality
ppm = parts per million

a = detection limit is 0.0002 mg/l (ppm)
b = detection limit is 0.002 mg/l (ppm)
c = detection limit is 0.005 mg/l (ppm)

d = detection limit is 0.01 mg/l (ppm)
e = detection limit is 0.05 mg/l (ppm)
f = detection limit is 0.0015 mg/l (ppm)

g = detection limit is 0.001 mg/l (ppm)
h = detection limit is 0.003 mg/l (ppm)
# = Reference Levels not established

Koppers021107

Updated: 12/12/02 MSM
File Name: GW Rslts_KII _thru 07/02 ; 03 Metals-All

HAHN AND ASSOCIATES, INC.

Table 2 - Summary of Historical Analytical Results for Groundwater Samples: PAHs by EPA Method 8270
Koppers Industries, Inc. Coal Tar Pitch Monitoring Program
NW Natural - Gasco Facility
Portland, Oregon

Project No. 2708

PAHs by EPA Method 8270 (SIM)				Analytical Results ug/l (ppb)																	
				Carcinogenic PAHs							Non-carcinogenic PAHs										
Well Number	HAI Sample Number[1]	Chain of Custody Number	Sample Date	Benzo (a) anthracene	Benzo (b) fluoranthene	Benzo (k) fluoranthene	Benzo (a) pyrene	Chrysene	Dibenzo (a,h) anthracene	Indeno (1,2,3-cd) pyrene	Acenaphthene	Acenaphthylene	Anthracene	Benzo (g,h,i) perylene	Fluoranthene	Fluorene	Naphthalene	Phenanthrene	Pyrene	Total Carcinogenic PAHs	Total PAHs
MW-14-110	981116-MW14-110-06	2708-W037	16-Nov-98	ND[a]	ND[a]	ND[a]	ND[a]	ND[a]	ND[a]	ND[a]	ND[a]	ND[a]	ND[a]	ND[a]	ND[a]	ND[a]	ND[a]	ND[a]	ND[a]	ND	ND
	990216-MW14-110-005	2708-W042	16-Feb-99	ND[a]	ND[a]	ND[a]	ND[a]	ND[a]	ND[a]	ND[a]	0.11	ND[a]	ND[a]	ND[a]	ND[a]	ND[a]	ND[a]	ND[a]	ND[a]	ND	0.1
	990512-MW14-110-09	2708-W045	12-May-99	ND[a]	ND[a]	ND[a]	ND[a]	ND[a]	ND[a]	ND[a]	0.14	ND[a]	ND[a]	ND[a]	ND[a]	ND[a]	0.14	ND[a]	ND[a]	ND	0.3
	990823-MW14-110-06	2708-W049	23-Aug-99	ND[a]	ND[a]	ND[a]	ND[a]	ND[a]	ND[a]	ND[a]	0.29	ND[a]	ND[a]	ND[a]	ND[a]	ND[a]	0.12	ND[a]	ND[a]	ND	0.4
	991027-MW14-110-09	2708-W055	27-Oct-99	ND[a]	ND[a]	ND[a]	ND[a]	ND[a]	ND[a]	ND[a]	0.26	ND[a]	ND[a]	ND[a]	ND[a]	ND[a]	ND[a]	ND[a]	ND[a]	ND	0.3
	991027-MW14-110-09	2708-W055	27-Oct-99	ND[a]	ND[a]	ND[a]	ND[a]	ND[a]	ND[a]	ND[a]	0.26	ND[a]	ND[a]	ND[a]	ND[a]	ND[a]	ND[a]	ND[a]	ND[a]	ND	0.3
	000329-MW14-110-109	2708-W060	29-Mar-00	ND[a]	ND[a]	ND[a]	ND[a]	ND[a]	ND[a]	ND[a]	0.42	ND[a]	ND[a]	ND[a]	ND[a]	ND[a]	ND[a]	ND[a]	ND[a]	ND	0.4
	000329-MW14-110-110	2708-W060	29-Mar-00	ND[a]	ND[a]	ND[a]	ND[a]	ND[a]	ND[a]	ND[a]	0.42	ND[a]	ND[a]	ND[a]	ND[a]	ND[a]	ND[a]	ND[a]	ND[a]	ND	0.4
	000615-MW14-110-102	2708-W064	15-Jun-00	ND[a]	ND[a]	ND[a]	ND[a]	ND[a]	ND[a]	ND[a]	0.18	ND[a]	ND[a]	ND[a]	ND[a]	ND[a]	ND[a]	ND[a]	ND[a]	ND	0.2
	001005-MW14-110-06	2708-W066	5-Oct-00	ND[a]	ND[a]	ND[a]	ND[a]	ND[a]	ND[a]	ND[a]	ND[a]	ND[a]	ND[a]	ND[a]	ND[a]	ND[a]	ND[a]	ND[a]	ND[a]	ND	ND
	001220-MW14-110-102	2708-W068	20-Dec-00	ND[a]	ND[a]	ND[a]	ND[a]	ND[a]	ND[a]	ND[a]	0.14	ND[a]	ND[a]	ND[a]	ND[a]	ND[a]	ND[a]	ND[a]	ND[a]	ND	0.1
	010328-MW14-110-108	2708-W071	28-Mar-01	ND[a]	ND[a]	ND[a]	ND[a]	ND[a]	ND[a]	ND[a]	0.23	ND[a]	ND[a]	ND[a]	ND[a]	ND[a]	ND[a]	ND[a]	ND[a]	ND	0.2
	011009-MW14-110-105	2708-W075	9-Oct-01	ND[a]	ND[a]	ND[a]	ND[a]	ND[a]	ND[a]	ND[a]	ND[a]	ND[a]	ND[a]	ND[a]	ND[a]	ND[a]	ND[a]	ND[a]	ND[a]	ND	ND
	011213-MW14-110-101	2708-W077	13-Dec-01	ND[a]	ND[a]	ND[a]	ND[a]	ND[a]	ND[a]	ND[a]	ND[a]	ND[a]	ND[a]	ND[a]	ND[a]	ND[a]	ND[a]	ND[a]	ND[a]	ND	ND
	020404-MW14-110-108	0204075-05A	4-Apr-02	ND[a]	ND[a]	ND[a]	ND[a]	ND[a]	ND[a]	ND[a]	ND[a]	0.1	ND[a]	ND[a]	ND[a]	ND[a]	ND[a]	ND[a]	ND[a]	ND	0.1
	020711-MW14-110-101	-	11-Jul-02	ND[a]	ND[a]	ND[a]	ND[a]	ND[a]	ND[a]	ND[a]	ND[a]	ND[a]	ND[a]	ND[a]	ND[a]	ND[a]	ND[a]	ND[a]	ND[a]	ND	ND
MW-15-50	990728-MW15-50-04	2708-W048	28-Jul-99	ND[d]	ND[d]	ND[d]	ND[d]	ND[d]	ND[d]	ND[d]	50.	8,510.	ND[d]	ND[d]	ND[d]	83.	9,700.	117.	ND[d]	ND	18,460.
	991029-MW15-50-25	2708-W057	29-Oct-99	ND[e]	ND[e]	ND[e]	ND[e]	ND[e]	ND[e]	ND[e]	ND[e]	20.	ND[e]	ND[e]	ND[e]	ND[e]	716.	26.	ND[e]	ND	762.
	000403-MW15-50-125	2708-W062	3-Apr-00	0.79	0.51	0.49	0.55	0.73	ND[a]	0.24	22.	41.6	2.91	0.25	6.01	23.6	5,480.	25.9	5.16	3.31	5,611.
	000615-MW15-50-105	2708-W064	15-Jun-00	43.6	45.5	38.5	57.1	40.5	8.95	33.5	2.91	0.59	4.11	41.8	69.7	1.66	1.23	25.	60.1	267.65	475.
	000615-MW15-50-106	2708-W064	15-Jun-00	40.	44.1	36.3	53.5	38.3	8.87	32.6	2.96	0.77	4.1	40.2	65.2	1.71	1.23	23.8	57.3	253.67	451.
	001005-MW15-50-14	2708-W066	5-Oct-00	10.7	19.7	6.97	16.4	9.88	2.52	8.21	1.51	0.96	1.47	8.14	15.5	1.06	2.8	6.44	16.7	74.38	129.
	001221-MW15-50-105	2708-W069	21-Dec-00	26.1	39.6	14.8	32.2	20.8	4.13	21.3	43.5	66.1	6.14	24.	40.1	74.6	9,200.	10.9	36.9	158.93	9,661.
	001221-MW15-50-106	2708-W069	21-Dec-00	33.1	48.7	18.1	40.8	26.5	4.96	27.	52.4	70.6	6.58	30.3	50.3	78.	8,180.	12.6	50.7	199.16	8,731.
	010330-MW15-50-124	2708-W073	30-Mar-01	11.2	11.8	18.9	13.4	12.4	5.4	14.4	35.4	59.	9.58	15.1	22.7	45.7	6,860.	76.1	22.4	87.5	7,233.
	011010-MW15-50-111	2708-W076	10-Oct-01	2.47	2.62	2.08	2.95	2.37	0.47	1.56	18.1	29.7	2.19	1.77	5.33	26.	3,700.	37.2	4.26	14.52	3,839.
	011010-MW15-50-112	2708-W076	10-Oct-01	7.6	8.4	7.4	9.3	8.	1.8	5.7	44.6	60.4	4.2	6.4	12.7	53.9	59,100.	78.3	14.6	48.2	59,423.
	011214-MW15-50-104	2708-W078	14-Dec-01	0.35	0.1	0.1	0.1	0.33	ND[a]	ND[a]	26.8	43.8	3.	ND[a]	3.29	34.3	4,510.	42.8	2.27	0.98	4,667.
	011214-MW15-50-105	2708-W078	14-Dec-01	0.42	0.14	0.13	0.17	0.41	ND[a]	ND[a]	27.8	45.9	3.1	ND[a]	3.28	36.1	5,870.	45.6	2.33	1.27	6,035.
	020405-MW15-50-119	0204090-07A	5-Apr-02	1.57	1.33	1.39	1.76	1.81	0.61	1.29	20.	30.	3.29	1.5	5.75	26.	4,220.	34.	3.67	9.76	4,354.
	020711-MW15-50-104	-	11-Jul-02	2.5	2.6	2.7	2.9	3.1	ND[b]	1.7	19.7	31.3	4.	2.1	7.9	26.6	3,640.	41.2	7.6	15.5	3,796.
	020711-MW15-50-105	-	11-Jul-02	3.4	3.6	5.4	4.4	5.6	ND[c]	2.4	27.6	41.6	ND[c]	3.4	11.6	35.8	5,580.	52.6	10.6	24.8	5,788.
MW-15-66	990728-MW15-66-03	2708-W048	28-Jul-99	0.15	0.26	ND[a]	0.16	0.15	ND[a]	0.11	0.11	ND[a]	ND[a]	0.14	0.3	ND[a]	0.57	0.17	0.34	0.83	2.5
	991026-MW15-66-07	2708-W054	26-Oct-99	ND[a]	ND[a]	ND[a]	ND[a]	ND[a]	ND[a]	ND[a]	ND[a]	ND[a]	ND[a]	ND[a]	ND[a]	ND[a]	ND[a]	ND[a]	ND[a]	ND	ND
	000329-MW15-66-108	2708-W060	29-Mar-00	0.57	0.59	0.6	0.77	0.67	0.18	0.53	ND[a]	ND[a]	0.11	0.66	0.96	ND[a]	ND[a]	0.33	0.96	3.91	6.9
	000615-MW15-66-104	2708-W064	15-Jun-00	1.93	1.96	1.61	2.64	1.91	0.57	1.55	0.14	ND[a]	0.39	2.04	3.32	ND[a]	ND[a]	1.07	2.92	12.17	22.1
	001005-MW15-66-08	2708-W066	5-Oct-00	0.23	0.4	0.17	0.32	0.24	ND[a]	ND[a]	ND[a]	ND[a]	ND[a]	ND[a]	0.41	ND[a]	ND[a]	0.14	0.43	1.36	2.3
	001221-MW15-66-104	2708-W069	21-Dec-00	0.14	0.19	0.1	0.15	0.12	ND[a]	0.1	ND[a]	ND[a]	ND[a]	0.13	0.21	ND[a]	ND[a]	ND[a]	0.2	0.8	1.3
	010328-MW15-66-107	2708-W071	28-Mar-01	0.11	0.11	0.12	0.14	0.13	ND[a]	ND[a]	ND[a]	ND[a]	ND[a]	ND[a]	0.2	ND[a]	ND[a]	0.1	0.19	0.61	1.1
	011010-MW15-66-110	2708-W076	10-Oct-01	ND[a]	ND[a]	ND[a]	ND[a]	ND[a]	ND[a]	ND[a]	ND[a]	ND[a]	ND[a]	ND[a]	ND[a]	ND[a]	ND[a]	ND[a]	ND[a]	ND	ND
	011213-MW15-66-103	2708-W077	13-Dec-01	ND[a]	ND[a]	ND[a]	ND[a]	ND[a]	ND[a]	ND[a]	ND[a]	ND[a]	ND[a]	ND[a]	ND[a]	ND[a]	ND[a]	ND[a]	ND[a]	ND	ND
	020404-MW15-66-107	0204075-04A	4-Apr-02	ND[a]	ND[a]	ND[a]	ND[a]	ND[a]	ND[a]	ND[a]	ND[a]	ND[a]	ND[a]	ND[a]	0.12	ND[a]	ND[a]	ND[a]	ND[a]	ND	0.1
	020711-MW15-66-103	-	11-Jul-02	ND[a]	ND[a]	ND[a]	ND[a]	ND[a]	ND[a]	ND[a]	ND[a]	ND[a]	ND[a]	ND[a]	ND[a]	ND[a]	ND[a]	ND[a]	ND[a]	ND	ND

Note: # = Reference Level not established
EPA = U.S. Environmental Protection Agency
ND = not detected above detection limit indicated

1 = Sample number prefix: 2708-

ODEQ = Oregon Department of Environmental Quality
PAHs = polynuclear aromatic hydrocarbons

ppb = parts per billion
ug/l = micrograms per liter

a = detection limit is 0.1 ug/l (ppb)
b = detection limit is 1. ug/l (ppb)
c = detection limit is 2. ug/l (ppb)
d = detection limit is 10. ug/l (ppb)
e = detection limit is 20. ug/l (ppb)

Updated: 12/12/02 MSM
File Name: GW Rslts_KII _thru 07/02 ; 02 PAHs-All

HAHN AND ASSOCIATES, INC.

Koppers021108

Table 1 - Summary of Historical Analytical Results for Groundwater Samples: BTEX, Total PAHs, Total Phenols, and Cyanide
Koppers Industries, Inc. Coal Tar Pitch Monitoring Program
NW Natural - Gasco Facility
Portland, Oregon

Project No. 2708

Well Number	HAI Sample Number[1]	Chain of Custody Number	Sample Date	Analytical Results									
				EPA Method 8020 ug/l (ppb)					EPA Method 8270 SIM ug/l (ppb)		EPA 9010 mg/l (ppm)	EPA 9010 mg/l (ppm)	EPA 8270 ug/l (ppb)
				Benzene	Toluene	Ethyl benzene	Xylenes	Total BTEX	Carcinogenic PAHs	Total PAHs	Total Cyanide	Amenable Cyanide	Total Phenols
MW-14-110	981116-MW14-110-06	2708-W037	16-Nov-98	3.2	ND>0.5	ND>0.5	ND>1.5	3.2	ND	ND	0.05		-
	990216-MW14-110-005	2708-W042	16-Feb-99	12.7	ND>0.5	0.6	ND>1.5	13.3	ND	0.11	0.04	ND>0.02	-
	990512-MW14-110-09	2708-W045	12-May-99	22.1	ND>0.5	1.88	2.4	26.4	ND	0.28	0.03	0.03	-
	990823-MW14-110-06	2708-W049	23-Aug-99	45.6	0.75	1.85	2.09	50.3	ND	0.41	0.05	ND>0.02	-
	991027-MW14-110-09	2708-W055	27-Oct-99	28.6	0.81	1.45	ND>1.5	30.9	ND	0.26	0.04	ND>0.02	-
	991027-MW14-110-10	2708-W055	27-Oct-99	29.7	0.57	1.52	ND>1.5	31.8	ND	0.27	0.03	ND>0.02	-
	000329-MW14-110-109	2708-W060	29-Mar-00	7.84	ND>0.5	0.73	ND>1.5	8.6	ND	0.42	0.03	ND>0.02	-
	000329-MW14-110-110	2708-W060	29-Mar-00	8.9	0.5	0.83	ND>1.5	10.2	ND	0.42	0.03	ND>0.02	-
	000615-MW14-110-102	2708-W064	15-Jun-00	4.85	ND>0.5	ND>0.5	ND>1.5	4.9	ND	0.2	-	ND>0.02	-
	001005-MW14-110-06	2708-W066	5-Oct-00	ND>0.5	ND>0.5	ND>0.5	ND>1.5	ND	ND	ND	-	ND>0.02	-
	001220-MW14-110-102	2708-W068	20-Dec-00	ND>0.5	ND>0.5	ND>0.5	ND>1.5	ND	ND	0.14	-	ND>0.02	-
	010328-MW14-110-108	2708-W071	28-Mar-01	ND>0.5	ND>0.5	ND>0.5	ND>1.5	ND	ND	0.23	ND>0.02	ND>0.02	-
	010628-MW14-110-102	2708-W074	28-Jun-01	ND>0.500	ND>0.500	ND>0.500	ND>1.50	ND	ND	0.18	-	0.025	-
	011009-MW14-110-105	2708-W075	9-Oct-01	ND>0.500	ND>0.500	ND>0.500	ND>1.50	ND	ND	ND	0.05	-	-
	011213-MW14-110-101	2708-W077	13-Dec-01	ND>0.500	ND>0.500	ND>0.500	ND>1.50	ND	ND	ND	-	ND>0.0200	-
	020404-MW14-110-108	0204075-05A	4-Apr-02	ND>1.00	ND>1.00	ND>1.00	ND>2.00	ND	ND	0.1	ND>0.0400	ND>0.0400	-
	020711MW14-110-101	-	11-Jul-02	ND>0.500	ND>0.500	ND>0.500	ND>1.50	ND	ND	ND	ND>0.0400	ND>0.0400	-
MW-15-50	990728-MW15-50-04	2708-W048	28-Jul-99	95,100.	863.	223.	2,420.	98,606.	ND	18,460.	ND>0.020	ND>0.02	-
	991029-MW15-50-25	2708-W057	29-Oct-99	8,910.	134.	59.2	500.	9,603.2	ND	762.	0.15	ND>0.02	-
	000403-MW15-50-125	2708-W062	3-Apr-00	44,800.	620.	222.	2,300.	47,942.	3.31	5,610.74	0.07	ND>0.02	-
	000615-MW15-50-105	2708-W064	15-Jun-00	1,490.	14.3	6.62	42.	1,552.9	267.65	475.	-	ND>0.02	-
	000615-MW15-50-106	2708-W064	15-Jun-00	1,270.	10.	5.16	28.4	1,313.6	253.67	451.	-	ND>0.02	-
	001005-MW15-50-14	2708-W066	5-Oct-00	2,700.	5.65	3.83	15.2	2,724.7	74.38	128.96	-	ND>0.02	-
	001221-MW15-50-105	2708-W069	21-Dec-00	40,200.	356.	176.	1,620.	42,352.	158.93	9,661.17	-	0.03	-
	001221-MW15-50-106	2708-W069	21-Dec-00	46,200.	ND>125	ND>125	1,070.	47,270.	199.16	8,730.64	-	0.06	-
	010330-MW15-50-124	2708-W073	30-Mar-01	47,600.	270.	133.	1,250.	49,253.	87.50	7,233.48	0.15	0.09	-
	010628-MW15-50-105	2708-W074	28-Jun-01	2,580.	ND>25	ND>25	ND>75	2,580.	2.61	189.	-	0.089	-
	010628-MW15-50-106	2708-W074	28-Jun-01	3,420.	ND>25	ND>25	ND>75	3,420.	8.33	231.	-	0.105	-
	011010-MW15-50-111	2708-W076	10-Oct-01	44,000.	110.	208.	960.	45,278.	14.52	3,839.07	0.11	-	-
	011010-MW15-50-112	2708-W076	10-Oct-01	44,700.	109.	210.	970.	45,989.	48.20	59,423.3	0.07	-	-
	011214-MW15-50-104	2708-W078	14-Dec-01	64,000.	ND>500	ND>500	ND>1,500	64,000.	0.98	4,666.89	-	ND>0.0200	-
	011214-MW15-50-105	2708-W078	14-Dec-01	63,000.	ND>500	ND>500	ND>1,500	63,000.	1.27	6,034.96	-	ND>0.0200	-
	020405-MW15-50-119	0204090-07A	5-Apr-02	57,000.	ND>1.00	ND>1.00	ND>2.00	57,000.	9.76	4,353.97	0.1	ND>0.0400	-
	020711-MW15-50-104	-	11-Jul-02	53,500.	ND>250	ND>250	ND>750	53,500.	15.50	3,796.	ND>0.0400	ND>0.0400	-
	020711-MW15-50-105	-	11-Jul-02	58,000.	ND>250	ND>250	ND>750	58,000.	24.80	5,788.	ND>0.0400	ND>0.0400	-
MW-15-66	990728-MW15-66-03	2708-W048	28-Jul-99	3.61	ND>0.5	ND>0.5	ND>1.5	3.6	0.83	2.5	ND>0.020	ND>0.02	-
	990823-MW15-66-04	2708-W050	23-Aug-99	0.72	ND>0.5	ND>0.5	ND>1.5	0.7	-	-	-	-	-
	991026-MW15-66-07	2708-W054	26-Oct-99	ND>0.5	ND>0.5	ND>0.5	ND>1.5	ND	ND	ND	ND>0.020	ND>0.02	-
	000329-MW15-66-108	2708-W060	29-Mar-00	ND>0.5	ND>0.5	ND>0.5	ND>1.5	ND	3.91	6.93	ND>0.02	ND>0.02	-
	000615-MW15-66-104	2708-W064	15-Jun-00	ND>0.5	ND>0.5	ND>0.5	ND>1.5	ND	12.17	22.1	-	ND>0.02	-
	001005-MW15-66-08	2708-W066	5-Oct-00	ND>0.5	ND>0.5	ND>0.5	ND>1.5	ND	1.36	2.34	-	ND>0.02	-
	001221-MW15-66-104	2708-W069	21-Dec-00	ND>0.5	ND>0.5	ND>0.5	ND>1.5	ND	0.8	1.34	-	ND>0.02	-
	010328-MW15-66-107	2708-W071	28-Mar-01	ND>0.5	ND>0.5	ND>0.5	ND>1.5	ND	0.61	1.1	ND>0.02	ND>0.02	-
	010628-MW15-66-104	2708-W074	28-Jun-01	1.65	ND>0.500	ND>0.500	ND>1.50	1.65	ND	0.28	-	ND>0.02	-
	011010-MW15-66-110	2708-W076	10-Oct-01	ND>0.500	ND>0.500	ND>0.500	ND>1.51	ND	ND	ND	ND>0.02	-	-
	011213-MW15-66-103	2708-W077	13-Dec-01	ND>0.500	ND>0.500	ND>0.500	ND>1.50	ND	ND	ND	-	ND>0.0200	-
	020404-MW15-66-107	0204075-04A	4-Apr-02	ND>1.00	ND>1.00	ND>1.00	ND>2.00	ND	ND	0.12	ND>0.0400	ND>0.0400	-
	020711-MW15-66-103	-	11-Jul-02	ND>0.500	ND>0.500	ND>0.500	ND>1.50	ND	ND	ND	ND>0.0400	ND>0.0400	

Note:
'-' = Not Analyzed
# = Reference Level not established
BTEX = benzene, toluene, ethylbenzene, and xylenes
DEQ = Oregon Department of Environmental Quality

EPA = U.S. Environmental Protection Agency
mg/l = milligrams per liter
ND = not detected above detection limit indicated
PAHs = polynuclear aromatic hydrocarbons

ppb = parts per billion
ppm = parts per million
ug/l = micrograms per liter

1 = Sample number prefix: 2708-

Koppers021109

HAHN AND ASSOCIATES, INC.
ENVIRONMENTAL CONSULTANTS

December12, 2002

Mr. Amos Kamerer
Koppers Industries, Inc.
7540 NW St. Helens Road
Portland, Oregon 97210-3663

HAI Project #2708

SUBJECT: Groundwater Quality Data, Above-Ground Storage Tank Support Piling Monitoring, Koppers Industries, Inc. (KII) Lease Area, NW Natural-Gasco Facility, 7540 NW St. Helens Road, Portland, Oregon

Dear Mr. Kamerer:

On behalf of NW Natural, HAI is providing to KII a summary of groundwater quality data through July 2002 (Tables 1, 2, and 3) as obtained from wells at your facility that monitor groundwater conditions down-gradient from the coal tar pitch above-ground tank that was constructed by KII in 1999. (Figure 1).

As you are aware, monitoring wells MW-14-110, MW-15-50, and MW-15-66 (all down-gradient of the tank foundation pilings) are being monitored on a quarterly sampling frequency as per a December 14, 1999 assessment plan[1] approved by the Oregon Department of Environmental Quality. The assessment plan was implemented such that conditions down-gradient of the tank may receive on-going monitoring to ensure that piling installation activities completed in May 1999 do not exacerbate pre-existing environmental conditions at the site.

If there are any comments or questions, please contact either the undersigned.

Sincerely,

Robert Ede, R.G.
Associate

c: Mr. Bob Wyatt, NW Natural
Ms. Patty Dost, Schwabe, Williamson & Wyatt

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[1] Hahn and Associates, Inc. (1999), *Proposed Assessment Plan, Above-Ground Storage Tank Support Pilings, Koppers Lease Area, Northwest Natural Lease Area, Northwest Natural-Gasco Facility, 7900 NW St. Helens Road, Portland, Oregon* (Ede to Blischke, December 14, 1999).

Emissions Summary

2001 Reduced Through Put Volume

(Normal Fume Recovery Operation)

Documents Included

Annual throughput of coal tar pitch; Appendix "B" (25,058 tons/yr).
Annual throughput of heavy oil; Appendix "B" (143 tons/yr).
Total boiler operating time: 4,528 hours/yr.
Total hot oil operating time: 4,528 hours/yr.
Highest sulfur content of natural gas burned (no oil is expected to be used during the year): 3.0 lb/Mft^3.
Average plant operating schedule: Monday through Thursday, 24 hrs/day.
Emissions calculation: Attachments A, B, C, D and E.
2001 odor complaints and maintenance performed on fume system.

Estimated Air Emissions for 2001 Permit #26-2930
Portland Terminal Emissions Summary
Natural Gas Combustion, Fugitives, Scrubber, Tank Breathing and Working Losses

Unit	Comments	Commodity	NOx (lb/hr)	NOx Tons/Yr	VOC (lb/hr)	VOC Tons/Yr	CO (lb/hr)	CO Tons/Yr	SO2 (lb/hr)	SO2 Tons/Yr	PM-10 (lb/hr)	PM-10 Tons/Yr
Atlas Boiler		**Gas**	0.42	0.96	0.01	0.02	0.11	0.24	0.01	0.01	0.02	0.05
Hot Oil Heater		**Gas**	0.30	0.68	0.01	0.03	0.06	0.14	0.01	0.01	0.02	0.05
Hot Oil Heater (New)		**Gas**	0.19	0.43	0.01	0.02	0.14	0.32	0.00	0.01	0.02	0.04
Fume Recovery System [1,2]		**NA**			4.91	5.51						
Tank 33		**Heavy Oil**			0.01	0.043						
Tank 67		**Heavy Oil**			0.02	0.089						
Fugitives		**NA**			0.09	0.217						
Plant Total			**0.91**	**2.07**	**5.06**	**5.91**	**0.31**	**0.71**	**0.02**	**0.04**	**0.06**	**0.14**

NOTES

[1] The fume recovery system receives emissions from the following units: T-68, T-65, T-200, railcar loading and tank car loading.

[2] Hourly and annual VOC emissions from the fume recovery system were calculated using ChemCAD. Annual VOC's were adjusted by 2001 estimated operating hours.

Koppers021112

Attachment "A"

Fugitive Emissions

Attachment "A" Permit #26-2930
Estimated Fugitive Equipment Leaks, Potland Terminal, Koppers Portland 2001

Fugitive Equipment Leaks (Heavy Oil Tank 67)

Process Description	No. # in Service	Lb/Hr/Source	Emmisions Hrs/Yr	Emmisions Lbs/Yr
Pump Seals	3	0.01899	4.33	0.2466801
Valves in Line	23	0.00051	4.33	0.0507909
Pressure Relief Valves	0	0.22907	4.33	0
Open Ended Valves	1	0.00374	4.33	0.0161942
Flanges	57	0.00403	4.33	0.9946443
			Total Emmisions	1.3083095

Pumping rate: 200 gpm
Hours = 2 * gals throughput/gals pump rate/60 = 25969/200 *2/60 = 4.33

Fugitive Equipment Leaks (Heavy Oil Tank 33)

Process Description	No. # in Service	Lb/Hr/Source	Emmisions Hrs/Yr	Emmisions Lbs/Yr
Pump Seals	1	0.01899	10.82	0.2054718
Valves in Line	7	0.00051	10.82	0.0386274
Pressure Relief Valves	0	0.22907	10.82	0
Open Ended Valves	0	0.00374	10.82	0
Flanges	18	0.00403	10.82	0.7848828
			Total Emmisions	1.028982

Pumping rate: 80 gpm
Hours = 2 * gals throughput/gals pump rate/60 = 25969/80 *2/60 = 10.82

Koppers021114

Fugitive Equipment Leaks (Pitch Storage)

Process Description	No. # in Service	Lb/Hr/Source	Emmisions Hrs/Yr	Emmisions Lbs/Yr
Pump Seals	5	0.01899	379.67	36.0496665
Valves in Line	31	0.00051	379.67	6.0025827
Pressure Relief Valves	0	0.22907	379.67	0
Open Ended Valves	5	0.00374	379.67	7.099829
Flanges	68	0.00403	379.67	104.0447668
			Total Emmisions	153.196845

Pumping rate: 400 gpm
Hours = 2 * gals throughput/gals pump rate/60 = 4556004/400 *2/60 = 379.67

Fugitive Equipment Leaks (Pitch Loading)

Process Description	No. # in Service	Lb/Hr/Source	Emmisions Hrs/Yr	Emmisions Lbs/Yr
Pump Seals	2	0.01899	379.67	14.4198666
Valves in Line	11	0.00051	379.67	2.1299487
Pressure Relief Valves	0	0.22907	379.67	0
Open Ended Valves	2	0.00374	379.67	2.8399316
Flanges	33	0.00403	379.67	50.4923133
			Total Emmisions	69.8820602

Pumping rate: 400 gpm
Hours = 2 * gals throughput/gals pump rate/60 = 4556004/400 *2/60 = 379.67

Koppers021115

Fugitive Equipment Leaks (Old Hot Oil Systems)

Process Description	No. # in Service	Lb/Hr/Source	Emmisions Hrs/Yr	Emmisions Lbs/Yr
Pump Seals	6	0.00007	4528	1.90176
Valves in Line	100	0.000018	4528	8.1504
Pressure Relief Valves	1	0.00007	4528	0.31696
Open Ended Valves	0	0.00031	4528	0
Flanges	170	0.00000086	4528	0.6619936
			Total Emmisions	11.0311136

Fugitive Equipment Leaks (New Hot Oil Systems)

Process Description	No. # in Service	Lb/Hr/Source	Emmisions Hrs/Yr	Emmisions Lbs/Yr
Pump Seals	7	0.00007	4528	2.21872
Valves in Line	159	0.000018	4528	12.959136
Pressure Relief Valves	0	0.00007	4528	0
Open Ended Valves	0	0.00031	4528	0
Flanges	207	0.00000086	4528	0.80607456
			Total Emmisions	15.98393086

Koppers021116

Fugitive Equipment Leaks (New Pitch Storage)

Process Description	No. # in Service	Lb/Hr/Source	Emmisions Hrs/Yr	*Emmisions* Lbs/Yr
Pump Seals	2	0.01899	379.67	14.4198666
Valves in Line	49	0.00051	379.67	9.4879533
Pressure Relief Valves	0	0.22907	379.67	0
Open Ended Valves	5	0.00374	379.67	7.099829
Flanges	98	0.00403	379.67	149.9468698
			Total Emmisions	180.9545187

Pumping rate: 400 gpm

Hours = 2 * gals throughput/gals pump rate/60 = 4556004/400 *2/60 = 379.67

Total Annual Fugitive Emissions

433.3857596

Koppers021117

Attachment "B"

Scrubber Emissions

Attachment "B" Permit #26-2930
Estimated Scrubber Emissions, Portland Terminal, Koppers Portland 2001

Assumptions:

Total annual pitch production:	25,058	tons/yr
Pitch charging into T-65:	0	tons/hr
% Pitch loaded into trucks from T-68	65	% of total pitch production
Pitch loading rate	60	tons/hr
% Pitch loaded into railcar from T-65	35	% of total pitch production
Pitch loading rate	70	tons/hr
% Pitch transferred fron T-65 to T-68	65	% of total pitch production
Pitch transfer pumping rate, t-65 to T-68	93	tons/hr
Heavy oil pumping rate	14	tons/hr
Heavy oil annual usage	143	tons/yr

Calculations:

Transfer Description	Amount per Charge (tons)	Pumping Rate (tons/hr)	Total Transfers (tons/yr)	Transfer Time (hours)	Total Transfers	T-65 fume (hours)	T-68 fume (hours)	Total (hours)
Dry pitch charging	64	55	0	0	0	0		0
From T-68 to trucks	37	60	16,287	271	440		1,152	1,152
From T-65 to railcar	92	70	8,770	125	95	316		316
From T-65 to T-68	64	70	16,287	233	256		744	744
Heavy oil transfer	6	14	143	10	25	30	30	30
Total				639	816	346	1,926	2,242

Annual Operating Hours: 25.59% annual operating hours available

Monthly Emissions (from chem cad): 3,585 lbs/month

Annual Emissions: 11,010 lbs/yr
5.50 tons/yr

Koppers021119

Attachment "C"

Tank Breathing and Working Losses

Attachment "C" Permit #26-2930
Estimated Tank Breathing and Working Losses, Portland Terminal, Koppers Portland 2001

TANK #	VOLUME 1000 GAL	LABEL	M	P PSIA	D FT	H FT	DELTA DEGREES F	F SUB P	C	K SUBC	L SUBB LB/Yr	L SUBB LB/DAY	KSUBN	TEMP F	L SUBW LB/Yr	TOTAL GAL 1000 GAL/Yr	TOTAL LB/Yr LB+LW
POR T-33	45	Heavy Oil	143 22	0 0302	18	12	20	0 89	0 83	1	84 0108434	0 23016669	1	250	2 69573427	25 969	86 7065776R
POR T-67	90	Heavy Oil	143 22	0 0302	24 25	14 3	20	0 89	0 95	1	176 096078	0 48245501	1	250	2 69573427	25 969	178 791812
															Total	51.938	265.4983896

Emissions Lbs/Yr.
265 4983896

Koppers021121

Attachment “D”
Natural Gas Combustion Emissions

Estimated Portland gas 01

PORTLAND TERMINAL

ESTIMATED EMISSIONS CALCULATED FOR NATURAL GAS COMBUSTION SOURCES 2001

Atlas Boiler	Usage Therms	Usage ft3	Usage Mft	CO	CO2	NOx	PM	PM10	SO2	VOM
Jan-00	11632	1139232	1	40	136708	159	7	9	2	3
Feb-00	11632	1139232	1	40	136708	159	7	9	2	3
Mar-00	11632	1139232	1	40	136708	159	7	9	2	3
Apr-00	11632	1139232	1	40	136708	159	7	9	2	3
May-00	11632	1139232	1	40	136708	159	7	9	2	3
Jun-00	11632	1139232	1	40	136708	159	7	9	2	3
Jul-00	11632	1139232	1	40	136708	159	7	9	2	3
Aug-00	11632	1139232	1	40	136708	159	7	9	2	3
Sep-00	11632	1139232	1	40	136708	159	7	9	2	3
Oct-00	11632	1139232	1	40	136708	159	7	9	2	3
Nov-00	11632	1139232	1	40	136708	159	7	9	2	3
Dec-00	11632	1139232	1	40	136708	159	7	9	2	3
Total Mft3			13.67							
Total Emissions lb/yr				478	1640494	1914	85	103	26	38

139579	dec-feb	34895	25
	mar-may	34895	25
	jun-aug	34895	25
	sep-nov	34895	25
		139579	

ESTIMATED EMISSIONS CALCULATED FOR NATURAL GAS COMBUSTION SOURCES 2001

New Hot Oil Heater	Usage Therms	Usage ft3	Usage Mft	CO	CO2	NOx	PM	PM10	SO2	VOM
Jan-00	9047	886074	1	54	106329	72	5	7	2	2
Feb-00	9047	886074	1	54	106329	72	5	7	2	2
Mar-00	9047	886074	1	54	106329	72	5	7	2	2
Apr-00	9047	886074	1	54	106329	72	5	7	2	2
May-00	9047	886074	1	54	106329	72	5	7	2	2
Jun-00	9047	886074	1	54	106329	72	5	7	2	2
Jul-00	9047	886074	1	54	106329	72	5	7	2	2
Aug-00	9047	886074	1	54	106329	72	5	7	2	2
Sep-00	9047	886074	1	54	106329	72	5	7	2	2
Oct-00	9047	886074	1	54	106329	72	5	7	2	2
Nov-00	9047	886074	1	54	106329	72	5	7	2	2
Dec-00	9047	886074	1	54	106329	72	5	7	2	2
Total Mft3			10.63							
Total Emissions lb/yr				649	1275947	861	66	80	20	30

dec-feb	27141	25
mar-may	27141	25
jun-aug	27141	25
sep-nov	27141	25
	108562	

Koppers021123

ESTIMATED EMISSIONS CALCULATED FOR NATURAL GAS COMBUSTION SOURCES 2001

Old Hot Oil Heater	Usage Therms	Usage ft3	Usage Mft	CO	CO2	NOx	PM	PM10	SO2	VOM
Jan-00	11632	1139232	1	24	136708	114	5	9	2	4
Feb-00	11632	1139232	1	24	136708	114	5	9	2	4
Mar-00	11632	1139232	1	24	136708	114	5	9	2	4
Apr-00	11632	1139232	1	24	136708	114	5	9	2	4
May-00	11632	1139232	1	24	136708	114	5	9	2	4
Jun-00	11632	1139232	1	24	136708	114	5	9	2	4
Jul-00	11632	1139232	1	24	136708	114	5	9	2	4
Aug-00	11632	1139232	1	24	136708	114	5	9	2	4
Sep-00	11632	1139232	1	24	136708	114	5	9	2	4
Oct-00	11632	1139232	1	24	136708	114	5	9	2	4
Nov-00	11632	1139232	1	24	136708	114	5	9	2	4
Dec-00	11632	1139232	1	24	136708	114	5	9	2	4
Total Mft3			13.67							
Total Emissions lb/yr				287	1640494	1367	62	103	26	52

dec-feb	34895	25
mar-may	34895	25
jun-aug	34895	25
sep-nov	34895	25
	139579	

		CO	CO2	NOx	PM	PM10	SO2	VOM
Total Emissions	Lbs/Yr	1,414	4,556,935	4,142	212	285	72	120

Koppers021124

Attachment "E"

Chem Cad Analvsis

Stream No.	1	33	20	5
Name	Pitch Fumes	Heavy Oil	Vap Totalizr	Minus Water
- - Overall - -				
Molar flow lbmol/ mo	0.0943	233.2134	102.4526	20.4882
Mass flow lb/ mo	24.7000	38289.0352	5062.2417	3585.6523
Temp F	400.0000	200.0000	200.0000	200.0000
Pres psia	14.7000	14.7000	14.7000	14.7000
Vapor mole fraction	0.0000	0.0000	0.0000	0.0000
Enth MMBtu/ mo	0.0114518	3.35397	-8.37564	1.51017
Tc F	1293.1027	1217.8970	874.6153	952.4783
Pc psia	395.1926	2408.7273	4633.7319	454.2526
Std. sp gr , wtr = 1	1.049	1.092	1.063	1.091
Std. sp gr , air = 1	9.046	5.669	1.706	6.043
Degree API	3.4243	-1.9726	1.6691	-1.7662
Heating values (60 F)				
Gross Btu/lbmol	4.308E+006	2.593E+006	5.878E+005	2.940E+006
Net Btu/lbmol	4.162E+006	2.492E+006	5.540E+005	2.847E+006
Average mol wt	261.9927	164.1803	49.4106	175.0107
Actual dens lb/ft3	56.9831	64.6572	63.1629	64.5217
Actual vol ft3/mo	0.4335	592.1855	80.1459	55.5728
Std liq gpm	0.0471	70.0686	9.5243	6.5722
Std vap 60F scf mo	35.7763	88499.5000	38878.5359	7774.8315
- - Liquid only - -				
Molar flow lbmol/mo	0.0943	233.2134	102.4526	20.4882
Mass flow lb/mo	24.7000	38289.0352	5062.2417	3585.6523
Average mol wt	261.9927	164.1803	49.4106	175.0107
Actual dens lb/ft3	56.9830	64.6572	63.1629	64.5217
Actual vol gpm	0.0540	73.8394	9.9934	6.9294
Std liq gpm	0.0471	70.0686	9.5243	6.5722
Std vap 60F scf mo	35.7763	88499.5000	38878.5359	7774.8315
Cp Btu/lbmol-F	132.7899	72.3780	28.2225	68.6495
Z factor	0.0104	0.0086	0.0021	0.0067
Visc cP	0.8220	1.761	0.4025	1.261
Th cond Btu/hr-ft-F	0.0624	0.0790	0.1258	0.0746
Surf tens dyne/cm	30.2345	40.3694	41.1704	34.4760

Stream No.	12
Name	CIrculation
- - Overall - -	
Molar flow lbmol/mo	212.7850
Mass flow lb/mo	51290.7813
Temp F	199.9745
Pres psia	14.7000
Vapor mole fraction	0.0000
Enth MMBtu/mo	16.6586
Tc F	1274.0345
Pc psia	454.6739
Std. sp gr , wtr = 1	1.079
Std. sp gr , air = 1	8.323
Degree API	-0.4005
Heating values (60 F)	
Gross Btu/lbmol	3.936E+006
Net Btu/lbmol	3.793E+006
Average mol wt	241.0452
Actual dens lb/ft3	63.6808
Actual vol ft3/mo	805.4355
Std liq gpm	95.0009
Std vap 60F scfmo	80747.3438
- - Liquid only - -	
Molar flow lbmol/mo	212.7850
Mass flow lb/mo	51290.7813
Average mol wt	241.0452
Actual dens lb/ft3	63.6808
Actual vol gpm	100.4294
Std liq gpm	95.0009
Std vap 60F scfmo	80747.3438
Cp Btu/lbmol-F	101.7720
Z factor	0.0124
Visc cP	3.336
Th cond Btu/hr-ft-F	0.0735
Surf tens dyne/cm	40.0285

<u>Attachment "F"</u>

<u>**Summary of Odor Complaints**</u>

<u>**Major Maintenance on Air Pollution Control Equipment**</u>

2001 Odor Complaints

Anticipate no odor complaints during the year 2001.

Maintenance to Fume System

1. Inspected demister pad in January 2001 and it did not require cleaning at that time.
2. Repaired south circulating pump in January.
3. Inspection of demister pad will be accomplished on a quarterly schedule.

Emissions Summary

2001 Reduced Through Put Volume

(Reduced Fume Recovery Operation)

Documents Included

Annual throughput of coal tar pitch; Appendix "B" (25,058 tons/yr).
Annual throughput of heavy oil; Appendix "B" (143 tons/yr).
Total boiler operating time: 4,528 hours/yr.
Total hot oil operating time: 4,528 hours/yr.
Highest sulfur content of natural gas burned (no oil is expected to be used during the year): 3.0 lb/Mft^3.
Average plant operating schedule: Monday through Thursday, 24 hrs/day.
Emissions calculation: Attachments A, B, C, D and E.
2001 odor complaints and maintenance performed on fume system.

Estimated Air Emissions for 2001 Permit #26-2930 (Reduced Fume Recovery Operation)
Portland Terminal Emissions Summary
Natural Gas Combustion, Fugitives, Fume Recovery, Tank Breathing and Working Losses

Unit	Comments	Commodity	NOx (lb/hr)	NOx Tons/Yr	VOC (lb/hr)	VOC Tons/Yr	CO (lb/hr)	CO Tons/Yr	SO2 (lb/hr)	SO2 Tons/Yr	PM-10 (lb/hr)	PM-10 Tons/Yr
Atlas Boiler		Gas	0.42	0.96	0.01	0.02	0.11	0.24	0.01	0.01	0.02	0.05
Hot Oil Heater		Gas	0.30	0.68	0.01	0.03	0.06	0.14	0.01	0.01	0.02	0.05
Hot Oil Heater (New)		Gas	0.19	0.43	0.01	0.02	0.14	0.32	0.00	0.01	0.02	0.04
Fume Recovery System [1,2,3]		NA			4.91	4.01						
Tank 33		Heavy Oil			0.01	0.043						
Tank 67		Heavy Oil			0.02	0.089						
Fugitives		NA			0.09	0.217						
Plant Total			**0.91**	**2.07**	**5.06**	**4.41**	**0.31**	**0.71**	**0.02**	**0.04**	**0.06**	**0.14**

NOTES

[1] The fume recovery system receives emissions from the following units: T-68, T-65, T-200, railcar loading and tank car loading.

[2] Hourly and annual VOC emissions from the fume recovery system were calculated using ChemCAD. Annual VOCs were adjusted by 2001 estimated operating hours.

[3] Emissions from the fume system reflect the reduced operating hours scenario.

Koppers021131

<u>Attachment "A"</u>

<u>Fugitive Emissions</u>

Attachment "A" Permit #26-2930
Estimated Fugitive Equipment Leaks, Potland Terminal, Koppers Portland 2001

Fugitive Equipment Leaks (Heavy Oil Tank 67)

Process Description	No. # in Service	Lb/Hr/Source	Emmisions Hrs/Yr	Emmisions Lbs/Yr
Pump Seals	3	0.01899	4.33	0.2466801
Valves in Line	23	0.00051	4.33	0.0507909
Pressure Relief Valves	0	0.22907	4.33	0
Open Ended Valves	1	0.00374	4.33	0.0161942
Flanges	57	0.00403	4.33	0.9946443
			Total Emmisions	1.3083095

Pumping rate: 200 gpm
Hours = 2 * gals throughput/gals pump rate/60 = 25969/200 *2/60 = 4.33

Fugitive Equipment Leaks (Heavy Oil Tank 33)

Process Description	No. # in Service	Lb/Hr/Source	Emmisions Hrs/Yr	Emmisions Lbs/Yr
Pump Seals	1	0.01899	10.82	0.2054718
Valves in Line	7	0.00051	10.82	0.0386274
Pressure Relief Valves	0	0.22907	10.82	0
Open Ended Valves	0	0.00374	10.82	0
Flanges	18	0.00403	10.82	0.7848828
			Total Emmisions	1.028982

Pumping rate: 80 gpm
Hours = 2 * gals throughput/gals pump rate/60 = 25969/80 *2/60 = 10.82

Koppers021133

Fugitive Equipment Leaks (Pitch Storage)

Process Description	No. # in Service	Lb/Hr/Source	Emmisions Hrs/Yr	Emmisions Lbs/Yr
Pump Seals	5	0.01899	379.67	36.0496665
Valves in Line	31	0.00051	379.67	6.0025827
Pressure Relief Valves	0	0.22907	379.67	0
Open Ended Valves	5	0.00374	379.67	7.099829
Flanges	68	0.00403	379.67	104.0447668
			Total Emmisions	153.196845

Pumping rate: 400 gpm
Hours = 2 * gals throughput/gals pump rate/60 = 4556004/400 *2/60 = 379.67

Fugitive Equipment Leaks (Pitch Loading)

Process Description	No. # in Service	Lb/Hr/Source	Emmisions Hrs/Yr	Emmisions Lbs/Yr
Pump Seals	2	0.01899	379.67	14.4198666
Valves in Line	11	0.00051	379.67	2.1299487
Pressure Relief Valves	0	0.22907	379.67	0
Open Ended Valves	2	0.00374	379.67	2.8399316
Flanges	33	0.00403	379.67	50.4923133
			Total Emmisions	69.8820602

Pumping rate: 400 gpm
Hours = 2 * gals throughput/gals pump rate/60 = 4556004/400 *2/60 = 379.67

Koppers021134

Fugitive Equipment Leaks (Old Hot Oil Systems)

Process Description	No. # in Service	Lb/Hr/Source	Emmisions Hrs/Yr		Emmisions Lbs/Yr
Pump Seals	6	0.00007	4528		1.90176
Valves in Line	100	0.000018	4528		8.1504
Pressure Relief Valves	1	0.00007	4528		0.31696
Open Ended Valves	0	0.00031	4528		0
Flanges	170	0.00000086	4528		0.6619936
				Total Emmisions	11.0311136

Fugitive Equipment Leaks (New Hot Oil Systems)

Process Description	No. # in Service	Lb/Hr/Source	Emmisions Hrs/Yr		Emmisions Lbs/Yr
Pump Seals	7	0.00007	4528		2.21872
Valves in Line	159	0.000018	4528		12.959136
Pressure Relief Valves	0	0.00007	4528		0
Open Ended Valves	0	0.00031	4528		0
Flanges	207	0.00000086	4528		0.80607456
				Total Emmisions	15.98393056

Koppers021135

Fugitive Equipment Leaks (New Pitch Storage)

Process Description	No. # in Service	Lb/Hr/Source	Emmisions Hrs/Yr	Emmisions Lbs/Yr
Pump Seals	2	0.01899	379.67	14.4198666
Valves in Line	49	0.00051	379.67	9.4879533
Pressure Relief Valves	0	0.22907	379.67	0
Open Ended Valves	5	0.00374	379.67	7.099829
Flanges	98	0.00403	379.67	149.9468698
			Total Emmisions	180.9545187

Pumping rate: 400 gpm
Hours = 2 * gals throughput/gals pump rate/60 = 4556004/400 *2/60 = 379.67

Total Annual Fugitive Emissions
433.3857596

Koppers021136

Attachment "B"

Scrubber Emissions

(Reduced Fume Recoverv Operations)

Attachment "B" Permit #26-2930
Estimated Fume Recovery Emissions, Portland Terminal, Koppers Portland 2001
Reduced Scrubber Operating Scenario

Assumptions:

Total annual pitch production:	25,058	tons/yr
Pitch charging into T-65:	0	tons/hr
% Pitch loaded into trucks from T-68	65	% of total pitch production
Pitch loading rate	60	tons/hr
% Pitch loaded into railcar from T-65	35	% of total pitch production
Pitch loading rate	70	tons/hr
% Pitch transferred fron T-65 to T-68	65	% of total pitch production
Pitch transfer pumping rate, t-65 to T-68	93	tons/hr
Heavy oil pumping rate	14	tons/hr
Heavy oil annual usage	143	tons/yr

From January through September 15, 2001 the fume system will operate approximately 23 hours/week.
From September 16, 2001 through December 31, 2001, the fume system will operate approximately 52 hours/week
37 weeks @ 23 hours/week = 851 hours
15 weeks @ 52 hours/week = 780 hours.
Total fume system operating hours under this operating scenario = 1631 hours/year.

Annual Operating Hours:	18.62% annual operating hours available
Monthly Emissions (from chem cad):	3,585 lbs/month
Annual Emissions:	8,010 lbs/yr 4.00 tons/yr

Koppers021138

Attachment "C"

Tank Breathing and Working Losses

Attachment "C" Permit #26-2930
Estimated Tank Breathing and Working Losses, Portland Terminal, Koppers Portland 2001

TANK #	VOLUME 1000 GAL	LABEL	M	P PSIA	D FT	H FT	DELTA DEGREES F	F SUB P	C	K SUBC	LSUBB LB/Yr	LSUBB LB/DAY	KSUBN	TEMP F	LSUBW LB/Yr	TOTAL GAL 1000 GAL/Yr	TOTAL LB/Yr LB+LW
POR-T-33	45	Heavy Oil	143 22	0 0302	18	12	20	0 89	0 83	1	84 0108434	0 23016669	1	250	2 69573427	25 969	86 70657768
POR-T-67	90	Heavy Oil	143 22	0 0302	24 25	14 3	20	0 89	0 95	1	176 096078	0 48245501	1	250	2 69573427	25 969	178 791812
															Total	51.938	265.4983896

Emissions Lbs/Yr
265 4983896

Koppers021140

Attachment "D"

Natural Gas Combustion Emissions

Estimated Portland gas 01

PORTLAND TERMINAL

ESTIMATED EMISSIONS CALCULATED FOR NATURAL GAS COMBUSTION SOURCES 2001

Atlas Boiler	Usage Therms	Usage ft3	Usage Mft	CO	CO2	NOx	PM	PM10	SO2	VOM
Jan-00	11632	1139232	1	40	136708	159	7	9	2	3
Feb-00	11632	1139232	1	40	136708	159	7	9	2	3
Mar-00	11632	1139232	1	40	136708	159	7	9	2	3
Apr-00	11632	1139232	1	40	136708	159	7	9	2	3
May-00	11632	1139232	1	40	136708	159	7	9	2	3
Jun-00	11632	1139232	1	40	136708	159	7	9	2	3
Jul-00	11632	1139232	1	40	136708	159	7	9	2	3
Aug-00	11632	1139232	1	40	136708	159	7	9	2	3
Sep-00	11632	1139232	1	40	136708	159	7	9	2	3
Oct-00	11632	1139232	1	40	136708	159	7	9	2	3
Nov-00	11632	1139232	1	40	136708	159	7	9	2	3
Dec-00	11632	1139232	1	40	136708	159	7	9	2	3
	Total Mft3		13.67							
Total Emissions lb/yr				478	1640494	1914	85	103	26	38

139579	dec-feb	34895	25
	mar-may	34895	25
	jun-aug	34895	25
	sep-nov	34895	25
		139579	

ESTIMATED EMISSIONS CALCULATED FOR NATURAL GAS COMBUSTION SOURCES 2001

New Hot Oil Heater	Usage Therms	Usage ft3	Usage Mft	CO	CO2	NOx	PM	PM10	SO2	VOM
Jan-00	9047	886074	1	54	106329	72	5	7	2	2
Feb-00	9047	886074	1	54	106329	72	5	7	2	2
Mar-00	9047	886074	1	54	106329	72	5	7	2	2
Apr-00	9047	886074	1	54	106329	72	5	7	2	2
May-00	9047	886074	1	54	106329	72	5	7	2	2
Jun-00	9047	886074	1	54	106329	72	5	7	2	2
Jul-00	9047	886074	1	54	106329	72	5	7	2	2
Aug-00	9047	886074	1	54	106329	72	5	7	2	2
Sep-00	9047	886074	1	54	106329	72	5	7	2	2
Oct-00	9047	886074	1	54	106329	72	5	7	2	2
Nov-00	9047	886074	1	54	106329	72	5	7	2	2
Dec-00	9047	886074	1	54	106329	72	5	7	2	2
	Total Mft3		10.63							
Total Emissions lb/yr				649	1275947	861	66	80	20	30

dec-feb	27141	25
mar-may	27141	25
jun-aug	27141	25
sep-nov	27141	25
	108562	

Koppers021142

ESTIMATED EMISSIONS CALCULATED FOR NATURAL GAS COMBUSTION SOURCES 2001

Old Hot Oil Heater	Usage Therms	Usage ft3	Usage Mft	CO	CO2	NOx	PM	PM10	SO2	VOM
Jan-00	11632	1139232	1	24	136708	114	5	9	2	4
Feb-00	11632	1139232	1	24	136708	114	5	9	2	4
Mar-00	11632	1139232	1	24	136708	114	5	9	2	4
Apr-00	11632	1139232	1	24	136708	114	5	9	2	4
May-00	11632	1139232	1	24	136708	114	5	9	2	4
Jun-00	11632	1139232	1	24	136708	114	5	9	2	4
Jul-00	11632	1139232	1	24	136708	114	5	9	2	4
Aug-00	11632	1139232	1	24	136708	114	5	9	2	4
Sep-00	11632	1139232	1	24	136708	114	5	9	2	4
Oct-00	11632	1139232	1	24	136708	114	5	9	2	4
Nov-00	11632	1139232	1	24	136708	114	5	9	2	4
Dec-00	11632	1139232	1	24	136708	114	5	9	2	4
	Total Mft3		13.67							
Total Emissions lb/yr				287	1640494	1367	62	103	26	52

dec-feb	34895	25
mar-may	34895	25
jun-aug	34895	25
sep-nov	34895	25
	139579	

		CO	CO2	NOx	PM	PM10	SO2	VOM
Total Emissions	Lbs/Yr	1,414	4,556,935	4,142	212	285	72	120

Koppers021143

Attachment "E"

Chem Cad Analvsis

Stream No.	1	33	20	5
Name	Pitch Fumes	Heavy Oil	Vap Totalizr	Minus Water
- - Overall - -				
Molar flow lbmol/ mo	0.0943	233.2134	102.4526	20.4882
Mass flow lb/ mo	24.7000	38289.0352	5062.2417	3585.6523
Temp F	400.0000	200.0000	200.0000	200.0000
Pres psia	14.7000	14.7000	14.7000	14.7000
Vapor mole fraction	0.0000	0.0000	0.0000	0.0000
Enth MMBtu/ mo	0.0114513	3.35397	-8.37564	1.51017
Tc F	1293.1027	1217.8970	874.6153	952.4783
Pc psia	395.1926	2408.7273	4633.7319	454.2526
Std. sp gr , wtr = 1	1.049	1.092	1.063	1.091
Std. sp gr , air = 1	9.046	5.669	1.706	6.043
Degree API	3.4243	-1.9726	1.6691	-1.7662
Heating values (60 F)				
Gross Btu/lbmol	4.308E+006	2.593E+006	5.878E+005	2.940E+006
Net Btu/lbmol	4.162E+006	2.492E+006	5.540E+005	2.847E+006
Average mol wt	261.9927	164.1803	49.4106	175.0107
Actual dens lb/ft3	56.9831	64.6572	63.1629	64.5217
Actual vol ft3/mo	0.4335	592.1855	80.1459	55.5728
Std liq gpm	0.0471	70.0686	9.5243	6.5722
Std vap 60F scf mo	35.7763	88499.5000	38878.5859	7774.8315
- - Liquid only - -				
Molar flow lbmol/mo	0.0943	233.2134	102.4526	20.4882
Mass flow lb/mo	24.7000	38289.0352	5062.2417	3585.6523
Average mol wt	261.9927	164.1803	49.4106	175.0107
Actual dens lb/ft3	56.9830	64.6572	63.1629	64.5217
Actual vol gpm	0.0540	73.8394	9.9934	6.9294
Std liq gpm	0.0471	70.0686	9.5243	6.5722
Std vap 60F scf mo	35.7763	88499.5000	38878.5859	7774.8315
Cp Btu/lbmol-F	132.7899	72.3780	28.2225	68.6495
Z factor	0.0104	0.0086	0.0021	0.0067
Visc cP	0.8220	1.761	0.4025	1.261
Th cond Btu/hr-ft-F	0.0624	0.0790	0.1258	0.0746
Surf tens dyne/cm	30.2345	40.3694	41.1704	34.4760

Stream No.	12
Name	CIrculation
- - Overall - -	
Molar flow lbmol/mo	212.7850
Mass flow lb/mo	51290.7813
Temp F	199.9745
Pres psia	14.7000
Vapor mole fraction	0.0000
Enth MMBtu/mo	16.6586
Tc F	1274.0345
Pc psia	454.6739
Std. sp gr , wtr = 1	1.079
Std. sp gr , air = 1	8.323
Degree API	-0.4005
Heating values (60 F)	
Gross Btu/lbmol	3.936E+006
Net Btu/lbmol	3.793E+006
Average mol wt	241.0452
Actual dens lb/ft3	63.6808
Actual vol ft3/mo	805.4355
Std liq gpm	95.0009
Std vap 60F scfmo	80747.3438
- - Liquid only - -	
Molar flow lbmol/mo	212.7850
Mass flow lb/mo	51290.7813
Average mol wt	241.0452
Actual dens lb/ft3	63.6808
Actual vol gpm	100.4294
Std liq gpm	95.0009
Std vap 60F scfmo	80747.3438
Cp Btu/lbmol-F	101.7720
Z factor	0.0124
Visc cP	3.336
Th cond Btu/hr-ft-F	0.0735
Surf tens dyne/cm	40.0285

Attachment "F"

Summary of Odor Complaints

Major Maintenance on Air Pollution Control Equipment

2001 Odor Complaints

Anticipate no odor complaints during the year 2001.

Maintenance to Fume System

1. Inspected demister pad in January 2001 and it did not require cleaning at that time.
2. Repaired south circulating pump in January.
3. Inspection of demister pad will be accomplished on a quarterly schedule.

ODEQ – ACDP
12 Month Rolling Emission Recap

July 2005 - June 2006 Annual Emissions Summary

Emission Unit	CO	NOx	PM10	SO2	VOC
Atlas Boiler	317.90	1254.98	67.23	23.31	24.96
Hot Oil Heater	202.53	601.76	45.07	13.75	22.91
Hot Oil Heater (New)	798.80	1019.55	94.40	28.37	33.77
Fume Recovery System	0.00	0.00	0.00	0.00	2823.57
Tank 33	0.00	0.00	0.00	0.00	2.33
Tank 67	0.00	0.00	0.00	0.00	0.03
Fugitives	0.00	0.00	0.00	0.00	165.64

Plant Total	CO	NOx	PM10	SO2	VOC
Pounds/Yr	1319.23	2876.29	206.71	65.43	3073.20
Tons/Yr	0.66	1.44	0.10	0.03	1.54
Allowable (Tons/Yr)	99	39	N/A	39	39

June 2005 - May 2006 Annual Emissions Summary

Emission Unit	CO	NOx	PM10	SO2	VOC
Atlas Boiler	307.30	1212.58	64.96	22.52	24.11
Hot Oil Heater	204.64	611.77	45.82	13.58	23.57
Hot Oil Heater (New)	736.92	937.38	86.79	25.74	30.94
Fume Recovery System	0.00	0.00	0.00	0.00	2670.13
Tank 33	0.00	0.00	0.00	0.00	2.27
Tank 67	0.00	0.00	0.00	0.00	0.03
Fugitives	0.00	0.00	0.00	0.00	143.92

Plant Total	CO	NOx	PM10	SO2	VOC
Pounds/Yr	**1248.86**	**2761.74**	**197.58**	**61.83**	**2894.98**
Tons/Yr	**0.62**	**1.38**	**0.10**	**0.03**	**1.45**
Allowable (Tons/Yr)	**99**	**39**	**N/A**	**39**	**39**

May 2005 - April 2006 Annual Emissions Summary

Emission Unit	CO	NOx	PM10	SO2	VOC
Atlas Boiler	308.79	1220.42	65.38	22.67	24.27
Hot Oil Heater	214.60	658.18	49.30	14.09	25.07
Hot Oil Heater (New)	695.34	889.87	82.40	23.98	29.31
Fume Recovery System	0.00	0.00	0.00	0.00	2681.09
Tank 33	0.00	0.00	0.00	0.00	2.23
Tank 67	0.00	0.00	0.00	0.00	0.03
Fugitives	0.00	0.00	0.00	0.00	142.39

Plant Total	CO	NOx	PM10	SO2	VOC
Pounds/Yr	**1218.73**	**2768.47**	**197.08**	**60.73**	**2904.39**
Tons/Yr	**0.61**	**1.38**	**0.10**	**0.03**	**1.45**
Allowable (Tons/Yr)	**99**	**39**	**N/A**	**39**	**39**

April 2005 - March 2006 Annual Emissions Summary

Emission Unit	CO	NOx	PM10	SO2	VOC
Atlas Boiler	315.70	1248.07	66.86	23.18	24.82
Hot Oil Heater	216.14	665.49	49.85	13.89	25.35
Hot Oil Heater (New)	680.47	870.13	80.57	22.77	28.63
Fume Recovery System	0.00	0.00	0.00	0.00	2731.78
Tank 33	0.00	0.00	0.00	0.00	2.20
Tank 67	0.00	0.00	0.00	0.00	0.03
Fugitives	0.00	0.00	0.00	0.00	127.80

Plant Total	CO	NOx	PM10	SO2	VOC
Pounds/Yr	**1212.31**	**2783.69**	**197.28**	**59.85**	**2940.60**
Tons/Yr	**0.61**	**1.39**	**0.10**	**0.03**	**1.47**
Allowable (Tons/Yr)	**99**	**39**	**N/A**	**39**	**39**

March 2005 - February 2006 Annual Emissions Summary

Emission Unit	CO	NOx	PM10	SO2	VOC
Atlas Boiler	312.82	1236.54	66.24	22.96	24.59
Hot Oil Heater	216.62	667.80	50.03	13.54	25.44
Hot Oil Heater (New)	686.73	878.43	81.34	22.26	28.92
Fume Recovery System	0.00	0.00	0.00	0.00	2737.26
Tank 33	0.00	0.00	0.00	0.00	2.25
Tank 67	0.00	0.00	0.00	0.00	0.03
Fugitives	0.00	0.00	0.00	0.00	130.51

Plant Total	CO	NOx	PM10	SO2	VOC
Pounds/Yr	**1216.17**	**2782.77**	**197.61**	**58.77**	**2948.98**
Tons/Yr	**0.61**	**1.39**	**0.10**	**0.03**	**1.47**
Allowable (Tons/Yr)	**99**	**39**	**N/A**	**39**	**39**

February 2005 - January 2006 Annual Emissions Summary

Emission Unit	CO	NOx	PM10	SO2	VOC
Atlas Boiler	307.12	1228.49	65.81	22.81	24.43
Hot Oil Heater	148.88	667.01	50.03	13.17	25.40
Hot Oil Heater (New)	648.34	860.91	79.71	21.17	28.32
Fume Recovery System	0.00	0.00	0.00	0.00	2696.16
Tank 33	0.00	0.00	0.00	0.00	2.47
Tank 67	0.00	0.00	0.00	0.00	0.03
Fugitives	0.00	0.00	0.00	0.00	130.53

Plant Total	CO	NOx	PM10	SO2	VOC
Pounds/Yr	**1104.35**	**2756.41**	**195.55**	**57.15**	**2907.33**
Tons/Yr	**0.55**	**1.38**	**0.10**	**0.03**	**1.45**
Allowable (Tons/Yr)	**99**	**39**	**N/A**	**39**	**39**

January 2005 - December 2005 Annual Emissions Summary

Emission Unit	CO	NOx	PM10	SO2	VOC
Atlas Boiler	302.32	1209.28	64.78	22.46	24.05
Hot Oil Heater	146.62	656.25	49.22	12.47	25.12
Hot Oil Heater (New)	622.89	827.11	76.58	19.40	28.43
Fume Recovery System	0.00	0.00	0.00	0.00	2635.88
Tank 33	0.00	0.00	0.00	0.00	2.43
Tank 67	0.00	0.00	0.00	0.00	0.03
Fugitives	0.00	0.00	0.00	0.00	130.03

Plant Total	CO	NOx	PM10	SO2	VOC
Pounds/Yr	**1071.83**	**2692.64**	**190.59**	**54.33**	**2845.96**
Tons/Yr	**0.54**	**1.35**	**0.10**	**0.03**	**1.42**
Allowable (Tons/Yr)	**99**	**39**	**N/A**	**39**	**39**

December 2004 - November 2005 Annual Emissions Summary

Emission Unit	CO	NOx	PM10	SO2	VOC
Atlas Boiler	166.93	667.71	40.38	16.17	17.32
Hot Oil Heater	91.81	437.20	31.02	13.31	19.59
Hot Oil Heater (New)	292.56	388.48	48.79	18.68	22.71
Fume Recovery System	0.00	0.00	0.00	0.00	1898.82
Tank 33	0.00	0.00	0.00	0.00	1.83
Tank 67	0.00	0.00	0.00	0.00	0.02
Fugitives	0.00	0.00	0.00	0.00	112.08

Plant Total	CO	NOx	PM10	SO2	VOC
Pounds/Yr	**551.30**	**1493.39**	**120.19**	**48.16**	**2072.38**
Tons/Yr	**0.28**	**0.75**	**0.06**	**0.02**	**1.04**
Allowable (Tons/Yr)	**99**	**39**	**N/A**	**39**	**39**

November 2004 - October 2005 Annual Emissions Summary

Emission Unit	CO	NOx	PM10	SO2	VOC
Atlas Boiler	188.36	753.43	44.97	17.77	19.02
Hot Oil Heater	103.36	492.20	35.15	14.74	21.70
Hot Oil Heater (New)	355.74	472.38	56.55	21.37	25.59
Fume Recovery System	0.00	0.00	0.00	0.00	2061.85
Tank 33	0.00	0.00	0.00	0.00	2.01
Tank 67	0.00	0.00	0.00	0.00	0.02
Fugitives	0.00	0.00	0.00	0.00	118.86

Plant Total	CO	NOx	PM10	SO2	VOC
Pounds/Yr	**647.46**	**1718.01**	**136.67**	**53.88**	**2249.07**
Tons/Yr	**0.32**	**0.86**	**0.07**	**0.03**	**1.12**
Allowable (Tons/Yr)	**99**	**39**	**N/A**	**39**	**39**

October 2004 - September 2005 Annual Emissions Summary

Emission Unit	CO	NOx	PM10	SO2	VOC
Atlas Boiler	210.43	841.71	49.70	19.41	20.78
Hot Oil Heater	115.23	548.73	39.39	16.21	23.86
Hot Oil Heater (New)	410.10	544.56	63.24	23.69	28.63
Fume Recovery System	0.00	0.00	0.00	0.00	2311.19
Tank 33	0.00	0.00	0.00	0.00	2.29
Tank 67	0.00	0.00	0.00	0.00	0.02
Fugitives	0.00	0.00	0.00	0.00	143.23

Plant Total	CO	NOx	PM10	SO2	VOC
Pounds/Yr	**735.76**	**1934.99**	**152.32**	**59.31**	**2530.00**
Tons/Yr	**0.37**	**0.97**	**0.08**	**0.03**	**1.26**
Allowable (Tons/Yr)	**99**	**39**	**N/A**	**39**	**39**

September 2004 - August 2005 Annual Emissions Summary

Emission Unit	CO	NOx	PM10	SO2	VOC
Atlas Boiler	229.48	917.92	53.78	20.82	22.29
Hot Oil Heater	126.46	602.17	43.39	17.60	25.91
Hot Oil Heater (New)	459.24	609.82	69.28	25.79	30.87
Fume Recovery System	0.00	0.00	0.00	0.00	2512.58
Tank 33	0.00	0.00	0.00	0.00	2.55
Tank 67	0.00	0.00	0.00	0.00	0.03
Fugitives	0.00	0.00	0.00	0.00	150.21

Plant Total	CO	NOx	PM10	SO2	VOC
Pounds/Yr	815.18	2129.91	166.46	64.21	2744.44
Tons/Yr	0.41	1.06	0.08	0.03	1.37
Allowable (Tons/Yr)	99	39	N/A	39	39

August 2004 - July 2005 Annual Emissions Summary

Emission Unit	CO	NOx	PM10	SO2	VOC
Atlas Boiler	248.56	994.23	57.87	20.13	21.55
Hot Oil Heater	137.65	655.45	47.39	17.70	26.06
Hot Oil Heater (New)	503.27	668.28	74.69	24.87	29.89
Fume Recovery System	0.00	0.00	0.00	0.00	2407.09
Tank 33	0.00	0.00	0.00	0.00	2.56
Tank 67	0.00	0.00	0.00	0.00	0.03
Fugitives	0.00	0.00	0.00	0.00	129.85

Plant Total	CO	NOx	PM10	SO2	VOC
Pounds/Yr	889.47	2317.96	179.95	62.70	2617.03
Tons/Yr	0.44	1.16	0.09	0.03	1.31
Allowable (Tons/Yr)	99	39	N/A	39	39

July 2004 - June 2005 Annual Emissions Summary

Emission Unit	CO	NOx	PM10	SO2	VOC
Atlas Boiler	277.28	1109.11	59.23	20.60	22.06
Hot Oil Heater	147.70	703.32	49.08	18.29	26.92
Hot Oil Heater (New)	531.98	706.40	68.35	22.67	27.54
Fume Recovery System	0.00	0.00	0.00	0.00	2478.33
Tank 33	0.00	0.00	0.00	0.00	2.57
Tank 67	0.00	0.00	0.00	0.00	0.03
Fugitives	0.00	0.00	0.00	0.00	111.84

Plant Total	CO	NOx	PM10	SO2	VOC
Pounds/Yr	**956.95**	**2518.83**	**176.65**	**61.56**	**2669.28**
Tons/Yr	**0.48**	**1.26**	**0.09**	**0.03**	**1.33**
Allowable (Tons/Yr)	**99**	**39**	**N/A**	**39**	**39**

June 2004 - May 2005 Annual Emissions Summary

Emission Unit	CO	NOx	PM10	SO2	VOC
Atlas Boiler	285.02	1140.07	60.89	21.17	22.67
Hot Oil Heater	146.09	695.66	48.50	13.22	26.63
Hot Oil Heater (New)	591.26	785.11	75.64	18.42	27.54
Fume Recovery System	0.00	0.00	0.00	0.00	2623.55
Tank 33	0.00	0.00	0.00	0.00	2.64
Tank 67	0.00	0.00	0.00	0.00	0.03
Fugitives	0.00	0.00	0.00	0.00	118.05

Plant Total	CO	NOx	PM10	SO2	VOC
Pounds/Yr	**1022.36**	**2620.84**	**185.03**	**52.81**	**2821.10**
Tons/Yr	**0.51**	**1.31**	**0.09**	**0.03**	**1.41**
Allowable (Tons/Yr)	**99**	**39**	**N/A**	**39**	**39**

May 2004 - April 2005 Annual Emissions Summary

Emission Unit	CO	NOx	PM10	SO2	VOC
Atlas Boiler	285.02	1140.07	61.08	20.65	22.60
Hot Oil Heater	161.76	695.66	52.17	12.29	24.75
Hot Oil Heater (New)	591.26	785.11	72.70	19.16	28.63
Fume Recovery System	0.00	0.00	0.00	0.00	2408.87
Tank 33	0.00	0.00	0.00	0.00	2.69
Tank 67	0.00	0.00	0.00	0.00	0.03
Fugitives	0.00	0.00	0.00	0.00	119.91

Plant Total	CO	NOx	PM10	SO2	VOC
Pounds/Yr	**1038.03**	**2620.84**	**185.95**	**52.10**	**2607.49**
Tons/Yr	**0.52**	**1.31**	**0.09**	**0.03**	**1.30**
Allowable (Tons/Yr)	**99**	**39**	**N/A**	**39**	**39**

April 2004 - March 2005 Annual Emissions Summary

Emission Unit	CO	NOx	PM10	SO2	VOC
Atlas Boiler	272.88	1091.50	58.47	18.97	22.14
Hot Oil Heater	133.02	633.42	47.51	12.03	22.28
Hot Oil Heater (New)	592.53	786.80	72.85	18.46	25.33
Fume Recovery System	0.00	0.00	0.00	0.00	1881.31
Tank 33	0.00	0.00	0.00	0.00	2.50
Tank 67	0.00	0.00	0.00	0.00	0.02
Fugitives	0.00	0.00	0.00	0.00	107.00

Plant Total	CO	NOx	PM10	SO2	VOC
Pounds/Yr	**998.42**	**2511.72**	**178.83**	**49.47**	**2060.59**
Tons/Yr	**0.50**	**1.26**	**0.09**	**0.02**	**1.03**
Allowable (Tons/Yr)	**99**	**39**	**N/A**	**39**	**39**

March 2004 - February 2005 Annual Emissions Summary

Emission Unit	CO	NOx	PM10	SO2	VOC
Atlas Boiler	272.88	1091.50	58.47	18.97	21.71
Hot Oil Heater	133.02	633.42	47.51	12.03	24.25
Hot Oil Heater (New)	592.53	786.80	72.85	18.46	27.59
Fume Recovery System	0.00	0.00	0.00	0.00	1930.51
Tank 33	0.00	0.00	0.00	0.00	2.73
Tank 67	0.00	0.00	0.00	0.00	0.03
Fugitives	0.00	0.00	0.00	0.00	138.15

Plant Total	CO	NOx	PM10	SO2	VOC
Pounds/Yr	**998.42**	**2511.72**	**178.83**	**49.47**	**2144.97**
Tons/Yr	**0.50**	**1.26**	**0.09**	**0.02**	**1.07**
Allowable (Tons/Yr)	**99**	**39**	**N/A**	**39**	**39**

February 2004 - January 2005 Annual Emissions Summary

Emission Unit	CO	NOx	PM10	SO2	VOC
Atlas Boiler	280.60	1122.41	60.13	18.86	22.32
Hot Oil Heater	147.13	644.94	48.37	15.28	24.69
Hot Oil Heater (New)	624.71	829.53	76.81	24.13	29.06
Fume Recovery System	0.00	0.00	0.00	0.00	1684.94
Tank 33	0.00	0.00	0.00	0.00	2.72
Tank 67	0.00	0.00	0.00	0.00	0.03
Fugitives	0.00	0.00	0.00	0.00	139.26

Plant Total	CO	NOx	PM10	SO2	VOC
Pounds/Yr	**1052.44**	**2596.89**	**185.31**	**58.27**	**1903.01**
Tons/Yr	**0.53**	**1.30**	**0.09**	**0.03**	**0.95**
Allowable (Tons/Yr)	**99**	**39**	**N/A**	**39**	**39**

January 2004 - December 2004 Annual Emissions Summary

Emission Unit	CO	NOx	PM10	SO2	VOC
Atlas Boiler	287.31	1149.23	61.57	18.66	22.85
Hot Oil Heater	135.85	646.92	48.52	12.29	24.76
Hot Oil Heater (New)	636.11	844.68	78.21	19.81	29.58
Fume Recovery System	0.00	0.00	0.00	0.00	1478.82
Tank 33	0.00	0.00	0.00	0.00	2.76
Tank 67	0.00	0.00	0.00	0.00	0.03
Fugitives	0.00	0.00	0.00	0.00	138.17

Plant Total	CO	NOx	PM10	SO2	VOC
Pounds/Yr	**1059.28**	**2640.83**	**188.30**	**50.77**	**1696.98**
Tons/Yr	**0.53**	**1.32**	**0.09**	**0.03**	**0.85**
Allowable (Tons/Yr)	**99**	**39**	**N/A**	**39**	**39**

December 2003 - November 2004 Annual Emissions Summary

Emission Unit	CO	NOx	PM10	SO2	VOC
Atlas Boiler	296.72	1186.87	63.58	18.70	23.60
Hot Oil Heater	152.84	672.11	50.41	12.77	25.73
Hot Oil Heater (New)	659.71	876.00	81.11	20.55	30.66
Fume Recovery System	0.00	0.00	0.00	0.00	1321.90
Tank 33	0.00	0.00	0.00	0.00	2.82
Tank 67	0.00	0.00	0.00	0.00	0.03
Fugitives	0.00	0.00	0.00	0.00	120.75

Plant Total	CO	NOx	PM10	SO2	VOC
Pounds/Yr	**1109.26**	**2734.99**	**195.10**	**52.02**	**1525.49**
Tons/Yr	**0.55**	**1.37**	**0.10**	**0.03**	**0.76**
Allowable (Tons/Yr)	**99**	**39**	**N/A**	**39**	**39**

November 2003 - October 2004 Annual Emissions Summary

Emission Unit	CO	NOx	PM10	SO2	VOC
Atlas Boiler	300.30	1201.19	64.35	18.46	23.89
Hot Oil Heater	146.95	699.78	52.48	13.30	26.79
Hot Oil Heater (New)	647.00	859.13	79.55	20.15	30.08
Fume Recovery System	0.00	0.00	0.00	0.00	1168.03
Tank 33	0.00	0.00	0.00	0.00	2.83
Tank 67	0.00	0.00	0.00	0.00	0.03
Fugitives	0.00	0.00	0.00	0.00	119.49

Plant Total	CO	NOx	PM10	SO2	VOC
Pounds/Yr	1094.25	2760.10	196.38	51.91	1371.13
Tons/Yr	0.55	1.38	0.10	0.03	0.69
Allowable (Tons/Yr)	99	39	N/A	39	39

October 2003 - September 2004 Annual Emissions Summary

Emission Unit	CO	NOx	PM10	SO2	VOC
Atlas Boiler	317.13	1268.53	67.96	18.94	25.23
Hot Oil Heater	155.64	741.12	55.58	14.08	28.37
Hot Oil Heater (New)	659.10	875.19	81.04	20.53	30.08
Fume Recovery System	0.00	0.00	0.00	0.00	937.54
Tank 33	0.00	0.00	0.00	0.00	2.79
Tank 67	0.00	0.00	0.00	0.00	0.03
Fugitives	0.00	0.00	0.00	0.00	122.44

Plant Total	CO	NOx	PM10	SO2	VOC
Pounds/Yr	1131.87	2884.85	204.58	53.55	1146.48
Tons/Yr	0.57	1.44	0.10	0.03	0.57
Allowable (Tons/Yr)	99	39	N/A	39	39

September 2003 - August 2004 Annual Emissions Summary

Emission Unit	CO	NOx	PM10	SO2	VOC
Atlas Boiler	318.93	1275.73	68.34	18.65	25.37
Hot Oil Heater	163.29	777.55	58.32	14.77	29.76
Hot Oil Heater (New)	663.52	881.07	81.58	20.67	30.28
Fume Recovery System	0.00	0.00	0.00	0.00	749.51
Tank 33	0.00	0.00	0.00	0.00	0.00
Tank 67	0.00	0.00	0.00	0.00	0.03
Fugitives	0.00	0.00	0.00	0.00	122.39

Plant Total	CO	NOx	PM10	SO2	VOC
Pounds/Yr	**1145.74**	**2934.35**	**208.24**	**54.09**	**957.35**
Tons/Yr	**0.57**	**1.47**	**0.10**	**0.03**	**0.48**
Allowable (Tons/Yr)	**99**	**39**	**N/A**	**39**	**39**

August 2003 - July 2004 Annual Emissions Summary

Emission Unit	CO	NOx	PM10	SO2	VOC
Atlas Boiler	325.39	1301.54	69.73	18.62	25.88
Hot Oil Heater	170.19	810.43	60.78	15.40	31.02
Hot Oil Heater (New)	665.37	883.52	81.81	20.72	30.37
Fume Recovery System	0.00	0.00	0.00	0.00	594.83
Tank 33	0.00	0.00	0.00	0.00	2.77
Tank 67	0.00	0.00	0.00	0.00	0.03
Fugitives	0.00	0.00	0.00	0.00	123.26

Plant Total	CO	NOx	PM10	SO2	VOC
Pounds/Yr	**1160.95**	**2995.50**	**212.32**	**54.75**	**808.15**
Tons/Yr	**0.58**	**1.50**	**0.11**	**0.03**	**0.40**
Allowable (Tons/Yr)	**99**	**39**	**N/A**	**39**	**39**

July 2003 - June 2004 Annual Emissions Summary

Emission Unit	CO	NOx	PM10	SO2	VOC
Atlas Boiler	321.24	1284.97	68.84	17.82	25.55
Hot Oil Heater	178.77	851.28	63.85	16.17	32.59
Hot Oil Heater (New)	686.78	911.96	84.44	21.39	31.34
Fume Recovery System	0.00	0.00	0.00	0.00	393.55
Tank 33	0.00	0.00	0.00	0.00	2.80
Tank 67	0.00	0.00	0.00	0.00	0.03
Fugitives	0.00	0.00	0.00	0.00	125.38

Plant Total	CO	NOx	PM10	SO2	VOC
Pounds/Yr	**1186.79**	**3048.21**	**217.12**	**55.39**	**611.25**
Tons/Yr	**0.59**	**1.52**	**0.11**	**0.03**	**0.31**
Allowable (Tons/Yr)	**99**	**39**	**N/A**	**39**	**39**

June 2003 - May 2004 Annual Emissions Summary

Emission Unit	CO	NOx	PM10	SO2	VOC
Atlas Boiler	328.34	1313.38	70.36	17.82	26.12
Hot Oil Heater	185.89	885.19	66.39	16.82	33.89
Hot Oil Heater (New)	681.37	904.77	83.78	21.22	31.10
Fume Recovery System	0.00	0.00	0.00	0.00	168.91
Tank 33	0.00	0.00	0.00	0.00	2.77
Tank 67	0.00	0.00	0.00	0.00	0.03
Fugitives	0.00	0.00	0.00	0.00	124.03

Plant Total	CO	NOx	PM10	SO2	VOC
Pounds/Yr	**1195.60**	**3103.34**	**220.52**	**55.87**	**386.85**
Tons/Yr	**0.60**	**1.55**	**0.11**	**0.03**	**0.19**
Allowable (Tons/Yr)	**99**	**39**	**N/A**	**39**	**39**

May 2003 - April 2004 Annual Emissions Summary

Emission Unit	CO	NOx	PM10	SO2	VOC
Atlas Boiler	335.61	1342.42	71.92	18.22	26.69
Hot Oil Heater	194.75	927.37	69.55	17.62	35.50
Hot Oil Heater (New)	691.05	917.62	78.34	21.52	31.54
Fume Recovery System	0.00	0.00	0.00	0.00	176.47
Tank 33	0.00	0.00	0.00	0.00	2.79
Tank 67	0.00	0.00	0.00	0.00	0.03
Fugitives	0.00	0.00	0.00	0.00	126.10

Plant Total	CO	NOx	PM10	SO2	VOC
Pounds/Yr	1221.40	3187.42	219.81	57.36	399.13
Tons/Yr	0.61	1.59	0.11	0.03	0.20
Allowable (Tons/Yr)	99	39	N/A	39	39

April 2003 - March 2004 Annual Emissions Summary

Emission Unit	CO	NOx	PM10	SO2	VOC
Atlas Boiler	342.34	1375.12	73.67	18.66	27.35
Hot Oil Heater	197.92	942.46	70.68	17.91	36.08
Hot Oil Heater (New)	688.55	914.30	78.03	21.45	31.42
Fume Recovery System	0.00	0.00	0.00	0.00	183.86
Tank 33	0.00	0.00	0.00	0.00	2.79
Tank 67	0.00	0.00	0.00	0.00	0.03
Fugitives	0.00	0.00	0.00	0.00	159.69

Plant Total	CO	NOx	PM10	SO2	VOC
Pounds/Yr	**1228.80**	**3231.88**	**222.38**	**58.02**	**441.22**
Tons/Yr	**0.61**	**1.62**	**0.11**	**0.03**	**0.22**
Allowable (Tons/Yr)	**99**	**39**	**N/A**	**39**	**39**

March 2003 - February 2004 Annual Emissions Summary

Emission Unit	CO	NOx	PM10	SO2	VOC
Atlas Boiler	351.12	1410.24	68.15	19.14	28.04
Hot Oil Heater	209.86	999.34	70.27	18.99	38.25
Hot Oil Heater (New)	706.04	937.53	71.48	21.99	32.22
Fume Recovery System	0.00	0.00	0.00	0.00	187.91
Tank 33	0.00	0.00	0.00	0.00	2.76
Tank 67	0.00	0.00	0.00	0.00	0.03
Fugitives	0.00	0.00	0.00	0.00	136.05

Plant Total	CO	NOx	PM10	SO2	VOC
Pounds/Yr	**1267.02**	**3347.11**	**209.90**	**60.12**	**425.27**
Tons/Yr	**0.63**	**1.67**	**0.10**	**0.03**	**0.21**
Allowable (Tons/Yr)	**99**	**39**	**N/A**	**39**	**39**

February 2003 - January 2004 Annual Emissions Summary

Emission Unit	CO	NOx	PM10	SO2	VOC
Atlas Boiler	360.21	1446.63	77.50	19.63	28.77
Hot Oil Heater	218.09	1038.51	72.76	19.73	39.75
Hot Oil Heater (New)	693.51	920.89	78.64	21.60	31.65
Fume Recovery System	0.00	0.00	0.00	0.00	182.99
Tank 33	0.00	0.00	0.00	0.00	2.73
Tank 67	0.00	0.00	0.00	0.00	0.03
Fugitives	0.00	0.00	0.00	0.00	137.76

Plant Total	CO	NOx	PM10	SO2	VOC
Pounds/Yr	**1271.81**	**3406.03**	**228.90**	**60.97**	**423.68**
Tons/Yr	**0.64**	**1.70**	**0.11**	**0.03**	**0.21**
Allowable (Tons/Yr)	**99**	**39**	**N/A**	**39**	**39**

January 2003 - December 2003 Annual Emissions Summary

Emission Unit	CO	NOx	PM10	SO2	VOC
Atlas Boiler	378.70	1520.55	81.46	20.64	30.24
Hot Oil Heater	226.99	1080.91	75.94	20.54	41.38
Hot Oil Heater (New)	700.90	930.70	79.55	21.83	31.99
Fume Recovery System	0.00	0.00	0.00	0.00	182.76
Tank 33	0.00	0.00	0.00	0.00	10.34
Tank 67	0.00	0.00	0.00	0.00	16.53
Fugitives	0.00	0.00	0.00	0.00	142.54

Plant Total	CO	NOx	PM10	SO2	VOC
Pounds/Yr	1306.59	3532.17	236.95	63.00	455.77
Tons/Yr	0.65	1.77	0.12	0.03	0.23
Allowable (Tons/Yr)	99	39	N/A	39	39

December 2002 - November 2003 Annual Emissions Summary

Emission Unit	CO	NOx	PM10	SO2	VOC
Atlas Boiler	397.54	1595.94	85.50	21.66	31.74
Hot Oil Heater	231.96	1104.57	77.71	20.99	42.28
Hot Oil Heater (New)	720.62	956.88	81.97	22.45	32.89
Fume Recovery System	0.00	0.00	0.00	0.00	188.64
Tank 33	0.00	0.00	0.00	0.00	20.30
Tank 67	0.00	0.00	0.00	0.00	35.69
Fugitives	0.00	0.00	0.00	0.00	165.23

Plant Total	CO	NOx	PM10	SO2	VOC
Pounds/Yr	1350.12	3657.40	245.18	65.09	516.77
Tons/Yr	0.68	1.83	0.12	0.03	0.26
Allowable (Tons/Yr)	99	39	N/A	39	39

November 2002 - October 2003 Annual Emissions Summary

Emission Unit	CO	NOx	PM10	SO2	VOC
Atlas Boiler	410.59	1648.12	88.29	22.37	32.77
Hot Oil Heater	228.92	1090.11	76.63	20.71	41.73
Hot Oil Heater (New)	755.60	1003.34	86.28	23.54	34.49
Fume Recovery System	0.00	0.00	0.00	0.00	204.08
Tank 33	0.00	0.00	0.00	0.00	27.95
Tank 67	0.00	0.00	0.00	0.00	52.19
Fugitives	0.00	0.00	0.00	0.00	170.31

Plant Total	CO	NOx	PM10	SO2	VOC
Pounds/Yr	1395.11	3741.56	251.20	66.61	563.53
Tons/Yr	0.70	1.87	0.13	0.03	0.28
Allowable (Tons/Yr)	99	39	N/A	39	39

October 2002 - September 2003 Annual Emissions Summary

Emission Unit	CO	NOx	PM10	SO2	VOC
Atlas Boiler	423.18	1698.48	90.99	23.05	33.78
Hot Oil Heater	208.37	992.24	69.29	18.85	37.98
Hot Oil Heater (New)	826.30	1097.22	94.97	25.74	37.71
Fume Recovery System	0.00	0.00	0.00	0.00	216.14
Tank 33	0.00	0.00	0.00	0.00	35.56
Tank 67	0.00	0.00	0.00	0.00	68.69
Fugitives	0.00	0.00	0.00	0.00	167.52

Plant Total	CO	NOx	PM10	SO2	VOC
Pounds/Yr	1457.85	3787.94	255.25	67.64	597.39
Tons/Yr	0.73	1.89	0.13	0.03	0.30
Allowable (Tons/Yr)	99	39	N/A	39	39

September 2002 - August 2003 Annual Emissions Summary

Emission Unit	CO	NOx	PM10	SO2	VOM
Atlas Boiler	430.37	1727.25	92.53	23.44	34.35
Hot Oil Heater	189.50	902.37	62.55	17.15	34.54
Hot Oil Heater (New)	889.12	1180.64	102.69	27.69	40.58
Fume Recovery System	0.00	0.00	0.00	0.00	224.95
Tank 33	0.00	0.00	0.00	0.00	43.16
Tank 67	0.00	0.00	0.00	0.00	85.19
Fugitives	0.00	0.00	0.00	0.00	178.45

Plant Total	CO	NOx	PM10	SO2	VOC
Pounds/Yr	1508.99	3810.25	257.77	68.28	641.21
Tons/Yr	0.75	1.91	0.13	0.03	0.32
Allowable (Tons/Yr)	99	39	N/A	39	39

August 2002 - July 2003 Annual Emissions Summary

Emission Unit	CO	NOx	PM10	SO2	VOM
Atlas Boiler	435.12	1746.27	93.55	23.70	34.73
Hot Oil Heater	175.54	835.89	57.56	15.88	32.00
Hot Oil Heater (New)	949.60	1260.94	110.13	29.58	43.34
Fume Recovery System	0.00	0.00	0.00	0.00	232.20
Tank 33	0.00	0.00	0.00	0.00	60.45
Tank 67	0.00	0.00	0.00	0.00	122.73
Fugitives	0.00	0.00	0.00	0.00	181.42

Plant Total	CO	NOx	PM10	SO2	VOC
Pounds/Yr	**1560.26**	**3843.10**	**261.24**	**69.16**	**706.87**
Tons/Yr	**0.78**	**1.92**	**0.13**	**0.03**	**0.35**
Allowable (Tons/Yr)	**99**	**39**	**N/A**	**39**	**39**

July 2002 - June 2003 Annual Emissions Summary

Emission Unit	CO	NOx	PM10	SO2	VOM
Atlas Boiler	454.57	1824.06	97.72	24.76	36.27
Hot Oil Heater	162.54	773.99	52.92	14.71	29.63
Hot Oil Heater (New)	995.08	1321.34	115.72	30.99	45.41
Fume Recovery System	0.00	0.00	0.00	0.00	234.80
Tank 33	0.00	0.00	0.00	0.00	68.03
Tank 67	0.00	0.00	0.00	0.00	139.23
Fugitives	0.00	0.00	0.00	0.00	186.99

Plant Total	CO	NOx	PM10	SO2	VOC
Pounds/Yr	**1612.19**	**3919.39**	**266.36**	**70.46**	**740.36**
Tons/Yr	**0.81**	**1.96**	**0.13**	**0.04**	**0.37**
Allowable (Tons/Yr)	**99**	**39**	**N/A**	**39**	**39**

May 2002 - April 2003 Annual Emissions Summary

Emission Unit	CO	NOx	PM10	SO2	VOM
Atlas Boiler	453.41	1819.39	97.47	24.69	36.18
Hot Oil Heater	158.63	755.37	51.52	14.35	28.92
Hot Oil Heater (New)	967.51	1284.72	118.96	30.14	44.16
Fume Recovery System	0.00	0.00	0.00	0.00	246.20
Tank 33	0.00	0.00	0.00	0.00	86.08
Tank 67	0.00	0.00	0.00	0.00	172.23
Fugitives	0.00	0.00	0.00	0.00	220.91

Plant Total	CO	NOx	PM10	SO2	VOC
Pounds/Yr	**1579.54**	**3859.48**	**267.95**	**69.18**	**834.68**
Tons/Yr	**0.79**	**1.93**	**0.13**	**0.03**	**0.42**
Allowable (Tons/Yr)	**99**	**39**	**N/A**	**39**	**39**

April 2002 - March 2003 Annual Emissions Summary

Emission Unit	CO	NOx	PM10	SO2	VOC
Atlas Boiler	453.41	1813.62	97.16	24.61	36.07
Hot Oil Heater	157.20	748.55	51.01	14.22	28.65
Hot Oil Heater (New)	960.02	1274.78	118.03	29.90	43.81
Fume Recovery System	0.00	0.00	0.00	0.00	241.55
Tank 33	0.00	0.00	0.00	0.00	86.44
Tank 67	0.00	0.00	0.00	0.00	167.69
Fugitives	0.00	0.00	0.00	0.00	188.71

Plant Total	CO	NOx	PM10	SO2	VOC
Pounds/Yr	**1570.62**	**3836.94**	**266.21**	**68.74**	**792.92**
Tons/Yr	**0.79**	**1.92**	**0.13**	**0.03**	**0.40**
Allowable (Tons/Yr)	**99**	**39**	**N/A**	**39**	**39**

March 2002 - February 2003 Annual Emissions Summary

Emission Unit	CO	NOx	PM10	SO2	VOC
Atlas Boiler	427.02	1708.07	91.50	23.18	33.97
Hot Oil Heater	136.76	651.22	48.84	12.37	24.93
Hot Oil Heater (New)	947.31	1173.18	116.47	29.51	43.23
Fume Recovery System [1,2]	0.00	0.00	0.00	0.00	249.01
Tank 33	0.00	0.00	0.00	0.00	94.09
Tank 67	0.00	0.00	0.00	0.00	184.19
Fugitives	0.00	0.00	0.00	0.00	182.75

Plant Total	CO	NOx	PM10	SO2	VOC
Pounds/Yr	**1511.09**	**3532.47**	**256.82**	**65.06**	**812.16**
Tons/Yr	**0.76**	**1.77**	**0.13**	**0.03**	**0.41**
Allowable (Tons/Yr)	**99**	**39**	**N/A**	**39**	**39**

February 2002 - January 2003 Annual Emissions Summary

Emission Unit	CO	NOx	PM10	SO2	VOC
Atlas Boiler	395.06	1580.26	84.66	21.45	31.42
Hot Oil Heater	125.52	597.70	44.83	11.36	22.88
Hot Oil Heater (New)	921.82	1224.06	113.34	28.71	42.07
Fume Recovery System	0.00	0.00	0.00	0.00	240.30
Tank 33	0.00	0.00	0.00	0.00	101.75
Tank 67	0.00	0.00	0.00	0.00	200.69
Fugitives	0.00	0.00	0.00	0.00	180.08

Plant Total	CO	NOx	PM10	SO2	VOC
Pounds/Yr	1442.40	3402.01	242.82	61.52	819.20
Tons/Yr	0.72	1.70	0.12	0.03	0.41
Allowable (Tons/Yr)	99	39	N/A	39	39

HAHN AND ASSOCIATES, INC.
ENVIRONMENTAL CONSULTANTS

November 1, 2000

Mr. Eric Blischke
Department of Environmental Quality
Voluntary Cleanup and Site Assessment Section
2020 SW 4th Avenue
Portland Oregon 97201

HAI Project No. 2708

SUBJECT: Updated Groundwater Quality Data, Above-Ground Storage Tank Support Piling Monitoring, Koppers Industries, Inc. Lease Area, NW Natural-Gasco Facility, 7900 NW St. Helens Road, Portland, Oregon

Dear Mr. Blischke:

On behalf of NW Natural, enclosed please find an updated summary of groundwater quality data (Tables 1 and 2) as obtained from wells at the Gasco site that monitor groundwater conditions down-gradient from the new above-ground coal tar pitch tank that was constructed by Koppers Industries, Inc. (KII) in 1999 (Figure 1). This data summary has been updated, as you requested in your October 12, 2000 correspondence to Mr. Bob Wyatt of NW Natural, to include groundwater sampling results from monitoring activities that were recently completed at the site on October 5, 2000. With this updated data in hand, it was agreed that the Oregon Department of Environmental Quality (DEQ) would have sufficient information necessary to reach a decision regarding the removal of the moratorium on future tank installations at the KII facility.

In review, 208 support pilings were driven to bedrock in May and June 1999 as part of the installation of the new coal tar pitch tank located on the KII property. Monitoring wells MW-14-110, MW-15-50 and MW-15-66 are being monitored on a quarterly sampling frequency as per a December 14, 1999 assessment plan[1] that has been implemented such that an evaluation of environmental impacts associated with piling construction may be completed. Wells MW-15-50 and MW-15-66 were installed in July 1999 and are located approximately 30 feet to the north, and down-gradient of, the support pilings, while well MW-14-110 is located approximately 250 feet north, and down-gradient of the pilings. Well MW-15-50 is screened from 40 to 50 feet bgs within the upper Alluvial Sand water bearing zone (WBZ), a depth interval that is immediately below the silt unit, while wells MW-15-66 and MW-14-110 are screened at the base of the Alluvial Sand WBZ across depths of 61 to 66 feet bgs and 100 to 110 feet bgs, respectively. The silt unit at this portion of the site acts to prevent the vertical migration of dense non-aqueous phase liquid (DNAPL) from the overlying Surficial Fill WBZ into the underlying Alluvial Sand WBZ.

The primary objective of the monitoring activities has been the acquisition of sufficient data such that the likely source of polynuclear aromatic hydrocarbon (PAH) and aromatic hydrocarbon (particularly benzene) contamination identified at the MW-15-50 well

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[1] Hahn and Associates, Inc. (1999), *Proposed Assessment Plan, Above-Ground Storage Tank Support Pilings, Koppers Lease Area, Northwest Natural Lease Area, Northwest Natural-Gasco Facility, 7900 NW St. Helens Road, Portland, Oregon* (Ede to Blischke), December 14, 1999.

location could be ascertained. Specifically, monitoring activities were designed to determine whether the impacts identified at MW-15-50: (1) pre-date the installation of tank foundation pilings; (2) are the result of limited piling drag-down of shallow contamination into the Alluvial Sand WBZ; or (3) are the result of the pilings acting as an on-going conduit for the continued migration of shallow contamination into the Alluvial Sand WBZ. The preceding determination is necessary in order to evaluate whether tank installation procedures have exacerbated existing contamination at the site, since KII desires to commence construction of a second tank, at a location immediately south of the first tank (Figure 1) in this area during 2001.

As provided within the Assessment Plan (HAI 1999), monitoring activities were completed since July 1999 to allow for the identification and evaluation of concentration trends at the wells such that the type/mechanism of the contaminant source currently identified at the MW-15-50 location could be ascertained. With completion of the October 2000 sampling event, more than one year of groundwater quality data (five quarterly sampling events) are now available (Tables 1 through 3). Descriptions of key observations and trends in contaminant concentrations are provided below, with an interpretation provided thereafter.

<u>Benzene Concentration Trends</u>

- Benzene concentrations at the MW-15-50 well location have decreased from a high of 95,100 parts per billion (ppb) in July 1999 to a low of 1,270 ppb in June 2000, while remaining low through the most recent sampling event in October 2000 (2,700 ppb on October 5, 2000) (Figure 2).

- Benzene concentrations at the MW-15-66 well location have consistently been non-detect since October 1999, with only low to trace levels identified at this well location during the first two sampling events in July and August, 1999 (Figure 3).

- Since installation of the tank support pilings in May and June 1999, decreasing concentrations of benzene have been identified at the well MW-14-110 location (from 45.6 ppb in August 1999 to non-detect in October 2000) (Figure 4).

<u>PAH Concentration Trends</u>

- The four most soluble PAHs (acenaphthene, acenaphthylene, fluorene, and naphthalene; all 2- to 3-ringed PAHs) were identified in groundwater at the MW-15-50 location during the initial July 1999 sampling event, with a combined total concentration of 18,460 ppb, while the less soluble carcinogenic (3- to 5-ring PAHs) were first identified at this location in April 2000 with a combined total concentration of 3.31 ppb. Low levels of 3- to 5-ringed PAHs may have been present prior to April 2000, but they would not have been detected at the concentrations identified in April 2000 due to elevated detection limits resulting from the need to dilute these samples because of the high concentrations of the more soluble PAHs that were encountered.

- Concentrations of the two most soluble PAHs, naphthalene and acenaphthylene, have consistently and dramatically declined through time at the MW-15-50 well location, decreasing from a combined total of 18,210 ppb as measured in July 1999 to only 3.76 ppb as measured in October 2000 (Figure 5).

- The concentrations of the relatively insoluble carcinogenic 3-ringed to 5-ringed PAHs at the MW-15-50 location, identified with a combined total concentration of 3.3 ppb during the April 2000 sampling event, were found to spike upwards during the June 2000 sampling event (to a combined total concentration of 265 ppb), with a subsequent decline as measured during the October 2000 sampling event (total concentration of 75 ppb) (Figure 6).

- With regard to the MW-15-66 location, the most soluble 2- and 3-ringed (non-carcinogenic) PAHs have only sporadically been identified at this location, and then only at very low concentrations (less than 10 ppb) (Figure 7). Although a small spike in 3-ring to 5-ring (carcinogenic) PAHs was noted at this location in June 2000 (12.17 ppb), results of the October 2000 sampling event indicated that concentrations of 3- to 5-ringed PAHs have since declined to their lowest recorded level since October 1999 (1.36 ppb) (Figure 8).

- With regard to the MW-14-110 location, only trace levels of 2 soluble PAHs (acenaphthene and naphthalene) have been identified in groundwater at this location, with no other PAHs having ever been identified. Results from the most recent sampling event, conducted in October 2000, indicate that no PAHs were detected at this location (Figure 9).

Predicted Contaminant Travel Times

As requested in the October 12, 2000 DEQ correspondence, an estimate of the travel time that might be expected with regard to dissolved plume contaminant migration from the source (i.e., pilings) to the observation point (i.e., monitoring wells) is included herein.

Based on site-specific slug test data, as reported within the HAI Phase I RI Investigation Summary Report[2], seepage velocities for groundwater within the Alluvial Sand WBZ have been estimated to range from 0.02 to 0.1 feet per day. Similarly, seepage velocity estimates of the same WBZ using hydraulic conductivity data from slug tests of nearby off-site wells, as reported by Geraghty & Miller, Inc.[3], results in seepage velocity estimates of 0.02 to 0.2 feet per day. Based on the preceding, assuming non-attenuated dissolved phase advective transport only, one would estimate a travel time from the pilings to the MW-15 well pair (approximately 30 feet) to be between 6 months and 4 years.

[2] Hahn and Associates, Inc. (1998), *Phase I Remedial Investigation Summary Report and Preliminary Analysis of Soil Data, Northwest Natural-Gasco Facility, 7900 NW St. Helens Road, Portland, Oregon*, October 9, 1998.

[3] Geraghty & Miller, Inc. (1991), Hydrogeological Investigation of the Doane Lake Area, Portland, Oregon, February 22, 1991.

Although the above provides an estimate of advective travel time within the Alluvial Sand WBZ, it is important to note that any product drag down into the Alluvial Sand WBZ caused by the pilings would result in contaminant transport via advective transport as well as by diffusion and gravity flow. The gravity flow component, if present, would have an unpredictable impact on overall contaminant travel times, while the diffusion component resulting from a large instantaneous concentration gradient could be significant.

Discussion

The initial peak and subsequent sharp decline of soluble aromatic hydrocarbon and PAH concentrations, as identified at well MW-15-50, is suggestive of a slug of contamination migrating past this well. Further, the initial presence of acenaphthene at a concentration that is more than two-times this constituent's solubility limit, provides some evidence that product may have been present near this location. The steady decline in contaminant concentrations at this location through time indicates that the slug of product was likely of limited extent and not the result of an ongoing release into the Alluvial Sand WBZ. Additionally, the significantly lower levels of contamination at the MW-15-66 well location indicates that there may have been insufficient product mass to overcome the likely permeability contrasts (i.e., silt layers) present within the upper Alluvial Sand WBZ.

Although concentrations of the more soluble PAHs have shown a dramatic decline at well MW-15-50, concentrations of the 3- to 5-ring PAHs are expected to persist, and to fluctuate, due to their greater tendency to partition onto soils through which the product slug has moved. For example, due to their mode of transport, concentrations of 3- to 5-ringed PAHs would be expected to fluctuate significantly as a function of sample turbidity. Based on the greater attenuation potential, the delayed peak in concentration for the least soluble PAH fraction as observed at the MW-15-50 location in June 2000 (Figure 6), does not appear to indicate the occurrence of a significant environmental issue with respect to the pilings.

It is noted that the potential does exist that a component of the contamination observed at the MW-15-50 location may be the result of well construction-related contaminant drag-down. However, due to the method of well construction (completed through a permanently installed steel surface casing installed across the zone of product), it does not appear likely that the significant concentrations identified at the MW-15-50 location (in excess of 95,000 ppb) could solely be attributable to well construction-related drag-down. As observed at existing wells where contaminant drag down is suspected (i.e., wells MW-10-61 and MW-14-110), benzene concentrations have not been identified at concentrations greater than 75 ppb. Based on the preceding, it does not appear likely that the benzene concentrations identified at well MW-15-50 would be the result of well construction-induced drag-down.

As described previously, the difference in the predicted contaminant travel time versus the observed travel time from the tank pilings to the MW-15 well pair location, may be due to several factors. First, the predicted travel time (between 6 months and 4 years) considered advective transport only, while in actuality, gravity flow and chemical diffusion both likely contributed significantly to overall transport. Additionally, it should be understood that the hydraulic conductivity values used for estimating seepage velocity were based on single well slug tests, which by their nature (short term, localized area) should be considered only qualitative estimates of average hydraulic conductivity that could underestimate the actual average hydraulic conductivity for the Alluvial Sand WBZ.

In summary, under a scenario involving an ongoing source of contamination to the Alluvial Sand WBZ, one would expect stable or increasing concentration trends at the MW-15-50 location, with a strong increasing trend in contaminant concentrations at well MW-15-66. Since overall trends observed to date indicate a decline in concentrations through time at the MW-15-50 location, and non-detect to low concentrations at MW-15-66, it does not appear that piling installation has resulted in creation of an artificial conduit leading to exacerbation of overall site contamination. Instead, contamination identified within the Alluvial Sand WBZ at the MW-15-50 well location location is likely the result of "one-time" contaminant drag-down during the piling installation. The slug of contamination resulting from the piling construction, as observed passing the MW-15-50 location, would not be expected to significantly contribute to the existing site contamination since this slug would attenuate and be masked by an existing plume of significantly greater mass and concentration within the Alluvial Sand WBZ at down-gradient portions of the site.

Recommendations

Based on the findings described herein, it is requested that DEQ remove the moratorium on further tank construction activities at the site.

Assuming that the moratorium is lifted, then in order to monitor for potential exacerbation issues related to new tank construction, it is proposed that a new monitoring well (MW-16), constructed in a similar manner as well MW-15-66, be installed as close to the location of the proposed tank as possible. Figure 1 includes a tentative location for this well. It is recommended that this well be installed as soon as possible, with monitoring to commence prior to piling installation. Such a sequence of events will provide for the collection of valuable "baseline" water quality data. A specific installation plan for this well will be provided to the DEQ for review in the near future.

If there are any comments or questions, please contact the undersigned.

Sincerely,

Robert Ede
Sr. Project Manager

c: Ms. Sandra Hart, NW Natural
Mr. Bob Wyatt, NW Natural
Mr. Amos Kamerer, Koppers Industries, Inc.
Mr. Richard Bach, Stoel Rives, LLP
Mr. Steve Cappellino, Anchor Environmental LLC

Table 1 - Summary of Historical Analytical Results for Groundwater Samples: BTEX, Total PAHs, and Cyanide (November 1998 to Present)

Remedial Investigation
NW Natural - Gasco Facility
Portland, Oregon

Project No. 2708

Well Number	HAI Sample Number[1]	Chain of Custody Number	Sample Date	Analytical Results: EPA Method 8020 ug/l (ppb)					EPA Method 8270 SIM ug/l (ppb)		EPA 9010 mg/l (ppm)	EPA 901 mg/l (ppm)
				Benzene	Toluene	Ethyl benzene	Xylenes	Total BTEX	Carcinogenic PAHs	Total PAHs	Total Cyanide	Amenable Cyanide
MW-14-110	981116-MW14-110-06	2708-W037	16-Nov-98	**3.2**	ND>0.5	ND>0.5	ND>1.5	3.2	ND	ND	**0.05**	
	990216-MW14-110-005	2708-W042	16-Feb-99	**12.7**	ND>0.5	0.6	ND>1.5	13.3	ND	0.11	**0.04**	ND>0.02
	990512-MW14-110-09	2708-W045	12-May-99	**22.1**	ND>0.5	1.88	2.4	26.4	ND	0.28	**0.03**	0.03
	990823-MW14-110-06	2708-W049	23-Aug-99	**45.6**	0.75	1.85	2.09	50.3	ND	0.41	**0.05**	ND>0.02
	991027-MW14-110-09	2708-W055	27-Oct-99	**28.6**	0.81	1.45	ND>1.5	30.9	ND	0.26	**0.04**	ND>0.02
	991027-MW14-110-10	2708-W055	27-Oct-99	**29.7**	0.57	1.52	ND>1.5	31.8	ND	0.27	**0.03**	ND>0.02
	000329-MW14-110-109	2708-W060	29-Mar-00	**7.84**	ND>0.5	0.73	ND>1.5	8.6	ND	0.42	**0.03**	ND>0.02
	000329-MW14-110-110	2708-W060	29-Mar-00	**8.9**	0.5	0.83	ND>1.5	10.2	ND	0.42	**0.03**	ND>0.02
	000615-MW14-110-102	2708-W064	15-Jun-00	**4.85**	ND>0.5	ND>0.5	ND>1.5	4.9	ND	0.2		ND>0.02
	001005-MW14-110-06	2708-W066	5-Oct-00	ND>0.5	ND>0.5	ND>0.5	ND>1.5	ND	ND	ND	ND>0.02	
MW-15-50	990728-MW15-50-04	2708-W048	28-Jul-99	**95,100.**	863.	223.	2,420.	98,606.	ND	18,460.	ND>0.020	ND>0.02
	991029-MW15-50-25	2708-W057	29-Oct-99	**8,910.**	134.	59.2	500.	9,603.2	ND	762.	**0.15**	ND>0.02
	000403-MW15-50-125	2708-W062	3-Apr-00	**44,800.**	620.	222.	2,300.	47,942.	**3.31**	5,611.	**0.07**	ND>0.02
	000615-MW15-50-105	2708-W064	15-Jun-00	**1,490.**	14.3	6.62	42.	1,552.9	**268.**	475.		ND>0.02
	000615-MW15-50-106	2708-W064	15-Jun-00	**1,270.**	10.	5.16	28.4	1,313.6	**254.**	451.		ND>0.02
	001005-MW15-50-14	2708-W066	5-Oct-00	**2,700.**	5.65	3.83	15.2	2,724.7	**74.**	129.	ND>0.020	
MW-15-66	990728-MW15-66-03	2708-W048	28-Jul-99	**3.61**	ND>0.5	ND>0.5	ND>1.5	3.6	**0.83**	3.	ND>0.020	ND>0.02
	990823-MW15-66-04	2708-W050	23-Aug-99	**0.72**	ND>0.5	ND>0.5	ND>1.5	0.7				
	991026-MW15-66-07	2708-W054	26-Oct-99	ND>0.5	ND>0.5	ND>0.5	ND>1.5	ND	ND	ND	ND>0.020	ND>0.02
	000329-MW15-66-108	2708-W060	29-Mar-00	ND>0.5	ND>0.5	ND>0.5	ND>1.5	ND	**3.91**	7.	ND>0.02	ND>0.02
	000615-MW15-66-104	2708-W064	15-Jun-00	ND>0.5	ND>0.5	ND>0.5	ND>1.5	ND	**12.17**	22.		ND>0.02
	001005-MW15-66-08	2708-W066	5-Oct-00	ND>0.5	ND>0.5	ND>0.5	ND>1.5	ND	**1.36**	2.	ND>0.020	
EPA Maximum Contaminant Levels (MCLs) for Drinking Water				5.	1,000.	700.	10,000.	#	#	#	0.2	#
EPA Region 9 Preliminary Remediation Goals (PRGs) for Tap Water (10/99)				0.41	720.	1,300.	1,400.	#	#	#	#	0.73
DEQ Ambient Water Quality Criteria (AWQC) for Surface Water[2]				40.[3]	424.[3]	1,400.[3]	#	#	0.031[4]	#	0.0052[4]	#

Note: BTEX = benzene, toluene, ethylbenzene, and xylenes
DEQ = Oregon Department of Environmental Quality
EPA = U.S. Environmental Protection Agency
mg/l = milligrams/liter
ND = not detected above detection limit indicated
PAHs = polynuclear aromatic hydrocarbons
ppb = parts per billion
ppm = parts per million
ug/l = micrograms per liter
= Reference Level not established
Bold and shaded = Detected above Lowest Identified Reference Level

1 = Sample number prefix: 2708-
2 = Reference Level indicated is the lowest guidance value provided in the Ambient Water Quality Criteria (OAR 340-41) based on Fresh Acute, Fresh Chronic (Aquatic Life Protection) and Fish Consumption (Human Health Protection)
3 = Reference Level based on Aquatic Fresh Chronic Criteria of AWQC
4 = Reference Level based on Human Fish Consumption Criteria of AWQC

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Table 2 - Summary of Historical Analytical Results for Groundwater Samples: PAHs by EPA Method 8270 (November 1998 to Present)

Remedial Investigation
NW Natural - Gasco Facility
Portland, Oregon

Project No. 2708

PAHs by EPA Method 8270 (SIM)				Analytical Results ug/l (ppb)																	
				Carcinogenic PAHs							Non-carcinogenic PAHs										
Well Number	Sample Number	Chain of Custody Number	Sample Date	Benzo (a) anthracene	Benzo (b) fluoranthene	Benzo (k) fluoranthene	Benzo (a) pyrene	Chrysene	Dibenzo (ah) anthracene	Indeno (1,2,3-cd) pyrene	Acenaphthene	Acenaphthylene	Anthracene	Benzo (ghi) perylene	Fluoranthene	Fluorene	Naphthalene	Phenanthrene	Pyrene	Total Carcinogenic PAHs	Total PAHs
MW-14-110	981116-MW14-110-06	2708-W037	16-Nov-98	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
	990216-MW14-110-005	2708-W042	16-Feb-99	ND	ND	ND	ND	ND	ND	ND	0.11	ND	ND	ND	ND	ND	ND	ND	ND	ND	0.1
	990512-MW14-110-09	2708-W045	12-May-99	ND	ND	ND	ND	ND	ND	ND	0.14	ND	ND	ND	ND	ND	0.14	ND	ND	ND	0.3
	990823-MW14-110-06	2708-W049	23-Aug-99	ND	ND	ND	ND	ND	ND	ND	0.29	ND	ND	ND	ND	ND	0.12	ND	ND	ND	0.4
	991027-MW14-110-09	2708-W055	27-Oct-99	ND	ND	ND	ND	ND	ND	ND	0.26	ND	ND	ND	ND	ND	ND	ND	ND	ND	0.3
	991027-MW14-110-09	2708-W055	27-Oct-99	ND	ND	ND	ND	ND	ND	ND	0.26	ND	ND	ND	ND	ND	ND	ND	ND	ND	0.3
	000329-MW14-110-109	2708-W060	29-Mar-00	ND	ND	ND	ND	ND	ND	ND	0.42	ND	ND	ND	ND	ND	ND	ND	ND	ND	0.4
	000329-MW14-110-110	2708-W060	29-Mar-00	ND	ND	ND	ND	ND	ND	ND	0.42	ND	ND	ND	ND	ND	ND	ND	ND	ND	0.4
	000615-MW14-110-102	2708-W064	15-Jun-00	ND	ND	ND	ND	ND	ND	ND	0.18	ND	ND	ND	ND	ND	ND	ND	ND	ND	0.2
	001005-MW14-110-06	2708-W066	5-Oct-00	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
MW-15-50	990728-MW15-50-04	2708-W048	28-Jul-99	ND [d]	ND [d]	ND [d]	ND [d]	ND [d]	ND [d]	ND [d]	50.	8,510.	ND [d]	ND [d]	ND [d]	83.	9,700.	117.	ND [d]	ND	18,460.
	991029-MW15-50-25	2708-W057	29-Oct-99	ND	ND	ND	ND	ND	ND	ND	ND	20.	ND	ND	ND	ND	716.	26.	ND	ND	762.
	000403-MW15-50-125	2708-W062	3-Apr-00	0.79	0.51	0.49	0.55	0.73	ND	0.24	22.	41.6	2.91	0.25	6.01	23.6	5,480.	25.9	5.16	3.31	5,611.
	000615-MW15-50-105	2708-W064	15-Jun-00	43.6	45.5	38.5	57.1	40.5	8.95	33.5	2.91	0.59	4.11	41.8	69.7	1.66	1.23	25.	60.1	267.65	475.
	000615-MW15-50-106	2708-W064	15-Jun-00	40.	44.1	36.3	53.5	38.3	8.87	32.6	2.96	0.77	4.1	40.2	65.2	1.71	1.23	23.8	57.3	253.67	451.
	001005-MW15-50-14	2708-W066	5-Oct-00	10.7	19.7	6.97	16.4	9.88	2.52	8.21	1.51	0.96	1.47	8.14	15.5	1.06	2.8	6.44	16.7	74.38	129.
MW-15-66	990728-MW15-66-03	2708-W048	28-Jul-99	0.15	0.26	ND	0.16	0.15	ND	0.11	0.11	ND	ND	0.14	0.3	ND	0.57	0.17	0.34	0.83	2.5
	991026-MW15-66-07	2708-W054	26-Oct-99	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
	000329-MW15-66-108	2708-W060	29-Mar-00	0.57	0.59	0.6	0.77	0.67	0.18	0.53	ND	ND	0.11	0.66	0.96	ND	ND	0.33	0.96	3.91	6.9
	000615-MW15-50-104	2708-W064	15-Jun-00	1.93	1.96	1.61	2.64	1.91	0.57	1.55	0.14	ND	0.39	2.04	3.32	ND	ND	1.07	2.92	12.17	22.1
	001005-MW15-66-08	2708-W066	5-Oct-00	0.23	0.4	0.17	0.32	0.24	ND	ND	ND	ND	ND	ND	0.41	ND	ND	0.14	0.43	1.36	2.3
EPA Maximum Contaminant Levels (MCLs) for Drinking Water				#	#	#	2.	#	#	#	#	#	#	#	#	#	#	#	#	#	#
EPA Region 9 Preliminary Remedial Goals (PRGs) for Tap Water (10/99)				0.092	0.092	0.92	0.0092	9.2	0.0092	0.092	370.	#	1,800.	#	1,500.	240.	6.2	#	180.	#	#
DEQ Ambient Water Quality Criteria (AWQC) for Surface Water [2]				#	#	#	#	#	#	#	520. [3]	#	#	#	54. [4]	#	620. [3]	#	#	0.031 [4]	#

Note:
# = Reference Level not established
EPA = U.S. Environmental Protection Agency
ND = not detected above detection limit indicated
ODEQ = Oregon Department of Environmental Quality

PAHs = polynuclear aromatic hydrocarbons
ppb = parts per billion
ug/l = micrograms per liter
Bold and shaded = Detected above lowest identified Reference Level

a = detection limit is 0.1 ug/l (ppb)
b = detection limit is 1. ug/l (ppb)
c = detection limit is 2. ug/l (ppb)
d = detection limit is 10. ug/l (ppb)
e = detection limit is 20. ug/l (ppb)

1 = Sample number prefix: 2708-
2 = Reference Level indicated is the lowest guidance value provided in the Ambient Water Quality Criteria (OAR 340-41) based on Fresh Acute, Fresh Chronic (Aquatic Life Protection) and Fish Consumption Only (Human Health Protection)
3 = Reference Level based on Aquatic Fresh Chronic Criteria of AWQC
4 = Reference Level based on Human Fish Consumption Criteria of AWQC

Koppers021197

Updated: 10/27/00 RBE
File Name: * 2708 GW Results_KII AST.wks

HAHN AND ASSOCIATES, INC

Table 3 - Summary of Historical Analytical Results for Groundwater Samples - November 1998 to Present
Priority Pollutant Metals by EPA Methods 6010, 200.7 and/or 7000 Series

Remedial Investigation
NW Natural - Gasco Facility
Portland, Oregon

Project No. 2708

Priority Pollutant Metals by EPA Methods 6010, 7000, and 200 Series				Analytical Results mg/l (ppm)																			
Well Number	HAI Sample Number [1]	Chain of Custody Number	Sample Date	Antimony	Arsenic	Dissolved Arsenic	Beryllium	Cadmium	Dissolved Cadmium	Chromium	Dissolved Chromium	Copper	Dissolved Copper	Lead	Dissolved Lead	Mercury	Nickel	Dissolved Nickel	Selenium	Silver	Thallium	Zinc	Dissolved Zinc
MW-14-110	981116-MW14-110-06	2708-W037	16-Nov-98		0.012					ND [c]		ND [c]		ND [c]			ND [c]					ND [c]	
	990216-MW14-110-005	2708-W042	16-Feb-99		0.013					ND [c]		ND [c]		ND [c]			ND [c]					0.03	
	990512-MW14-110-09	2708-W045	12-May-99		0.012					ND [c]		ND [c]		ND [c]			ND [c]					ND [c]	
	990823-MW14-110-06	2708-W049	23-Aug-99		0.011					ND [c]		ND [c]		ND [c]			ND [c]					ND [c]	
	991027-MW14-110-09	2708-W055	27-Oct-99		0.01					ND [c]		ND [c]		ND [c]			ND [c]					ND [c]	
	991027-MW14-110-10	2708-W055	27-Oct-99		0.01					ND [c]		ND [c]		ND [c]			ND [c]					0.005	
	000329-MW14-110-109	2708-W060	29-Mar-00		0.012					ND [c]		ND [c]		ND [c]			ND [c]					0.011	
	000329-MW14-110-110	2708-W060	29-Mar-00		0.012					ND [c]		ND [c]		ND [c]			ND [c]					ND [c]	
	000615-MW14-110-102	2708-W064	15-Jun-00		0.014					ND [c]		ND [c]		ND [c]			ND [c]					ND [c]	
	001005-MW14-110-06	2708-W066	5-Oct-00		0.041					ND [c]		ND [c]		ND [c]			ND [c]					ND [c]	
MW-15-50	991029-MW15-50-25	2708-W057	29-Oct-99		0.011					ND [c]		ND [c]		ND [c]			ND [c]					0.01	
	000403-MW15-50-125	2708-W062	3-Apr-00		ND [c]					ND [c]		ND [c]		ND [c]			ND [c]					0.02	
	000615-MW15-50-105	2708-W064	15-Jun-00		ND [c]					0.006		ND [c]		ND [c]			0.0064					0.0359	
	000615-MW15-50-106	2708-W064	15-Jun-00		ND [c]					ND [c]		ND [c]		ND [c]			ND [c]					0.0388	
	001005-MW15-50-14	2708-W066	5-Oct-00		0.0054					0.0176		0.0081		ND [c]			0.0121					0.0393	
MW-15-66	991026-MW15-66-07	2708-W054	26-Oct-99		ND [c]					ND [c]		ND [c]		ND [c]			ND [c]					ND [c]	
	000329-MW15-66-108	2708-W060	29-Mar-00		ND [c]					ND [c]		ND [c]		ND [c]			ND [c]					ND [c]	
	000615-MW15-50-104	2708-W064	15-Jun-00		0.005					ND [c]		ND [c]		ND [c]			ND [c]					0.021	
	001005-MW15-66-08	2708-W066	5-Oct-00		ND [c]					ND [c]		ND [c]		ND [c]			ND [c]					ND [c]	
EPA Maximum Contaminant Levels (MCLs) for Drinking Water				0.006	0.05	0.05	0.004	0.005	0.005	0.1	0.1	1.	1.	0.15	0.15	0.002	0.1	0.1	0.05	0.1	0.002	5.	5.
EPA Region 9 Preliminary Remediation Goals (PRGs) for Tap Water (10/99)				0.015	0.000045	0.000045	0.073	0.018	0.018	0.11	0.11	1.4	1.4	#	#	0.0036	0.73	0.73	0.18	0.18	#	11.	11.
ODEQ Ambient Water Quality Criteria (AWQC) for Surface Water [2]				1.6 [3]	0.000017 [4]	0.000017 [4]	0.000117 [4]	0.0011 [3]	0.0011 [3]	0.011 [3]	0.011 [3]	0.012 [3]	0.012 [3]	0.0032 [3]	0.0032 [3]	0.000012 [3]	0.1 [4]	0.1 [4]	0.035 [3]	0.00012 [3]	0.04 [3]	0.11 [3]	0.11 [3]

Note: EPA = U.S. Environmental Protection Agency
mg/l = milligrams/liter
ND = not detected above detection limit indicated
ODEQ = Oregon Department of Environmental Quality
ppm = parts per million

a = detection limit is 0.0002 mg/l (ppm)
b = detection limit is 0.002 mg/l (ppm)
c = detection limit is 0.005 mg/l (ppm)
d = detection limit is 0.01 mg/l (ppm)
e = detection limit is 0.05 mg/l (ppm)

= Reference Levels not established
Bold and shaded = Detected above lowest identified Reference Level

1 = Sample number prefix: 2708-
2 = Reference Level indicated is the lowest guidance value provided in the Ambient Water Quality Criteria (OAR 340-41) based on Fresh Acute, Fresh Chronic (Aquatic Life Protection) and Fish Consumption Only (Human Health Protection)
3 = Reference Level based on Aquatic Fresh Chronic Criteria of AWQC
4 = Reference Level based on Human Fish Consumption Criteria of AWQC
5 = Due to mislabeling in the field or due to laboratory misidentification, the laboratory report transposed results for MW4-35 and MW-4-57 in August 1997. Tables attribute data to the correct well.

Koppers021198

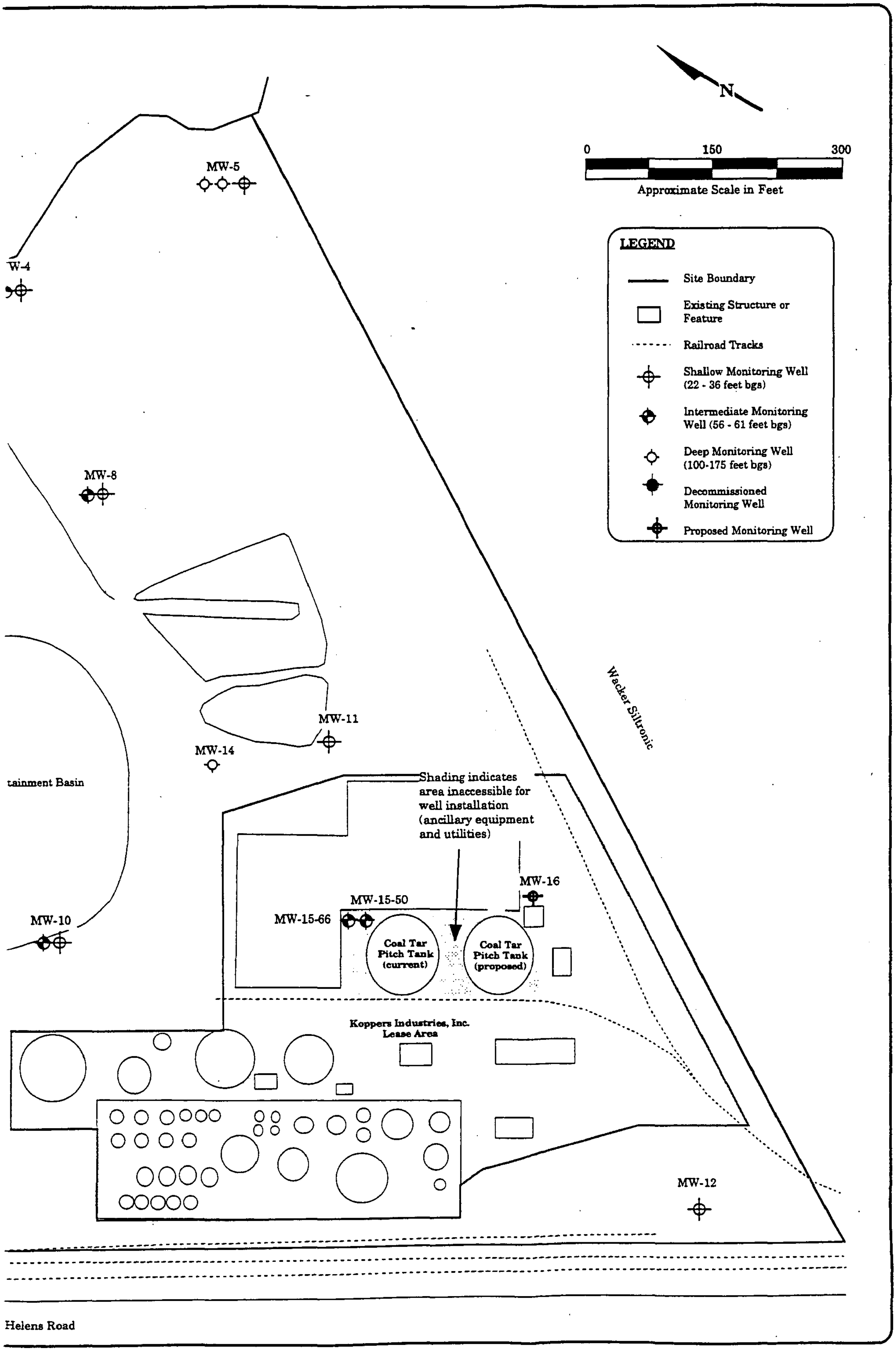


Figure 1

Site Map

Remedial Investigation
Northwest Natural - Gasco Facility
7900 NW St. Helens Road
Portland, Oregon

HAHN & ASSOCIATES, INC.

ENVIRONMENTAL MANAGEMENT
434 NW SIXTH AVENUE, SUITE 203
PORTLAND, OREGON 97209
503/796-0717

October 2000

Project No. 2708

Koppers021199

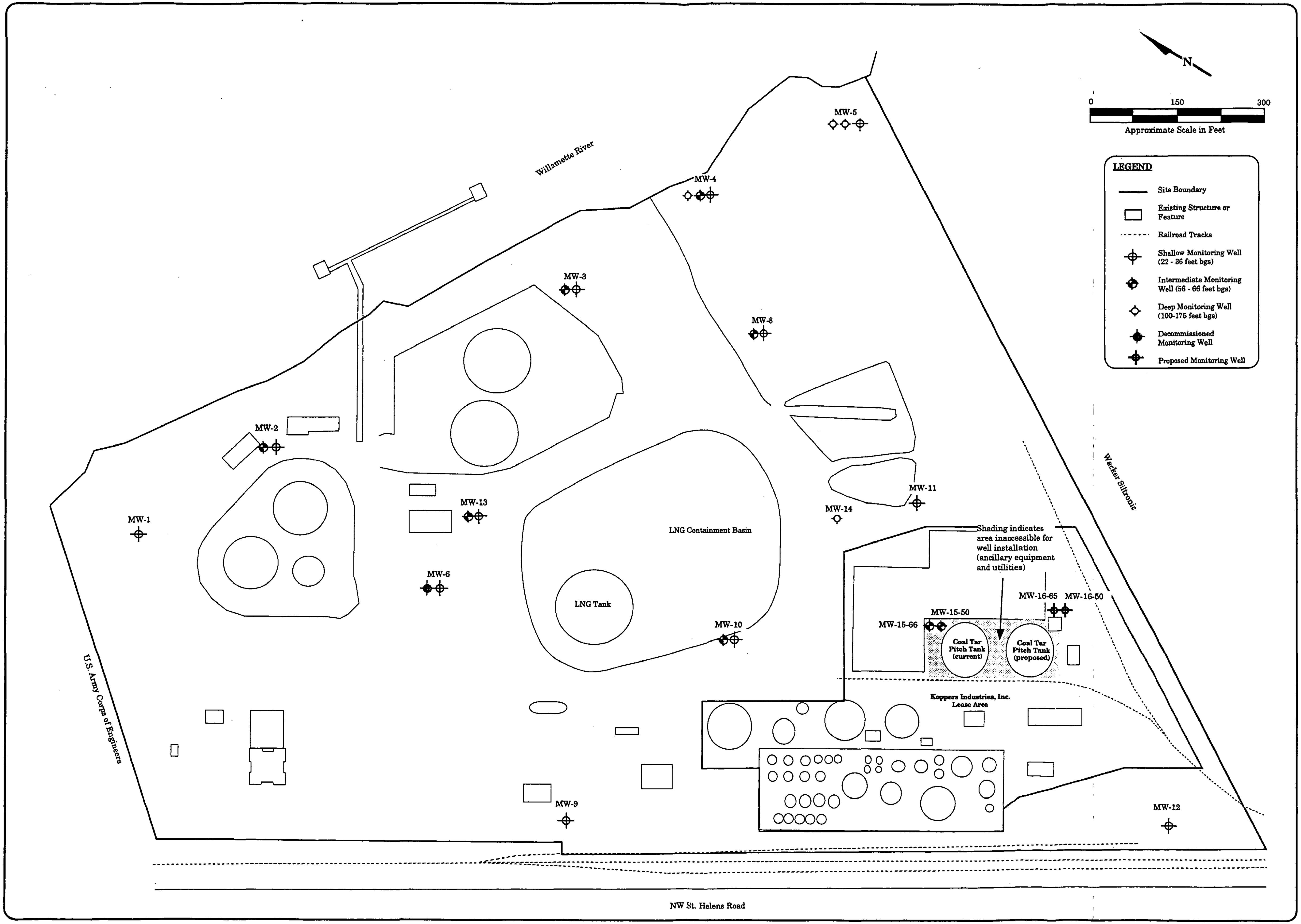


Figure 1

Site Map

Remedial Investigation
NW Natural - Gasco Facility
7900 NW St. Helens Road
Portland, Oregon

HAHN & ASSOCIATES, INC.

ENVIRONMENTAL MANAGEMENT
434 NW SIXTH AVENUE, SUITE 203
PORTLAND, OREGON 97209
503/796-0717

January 2001

Project No.
2708

Koppers021200

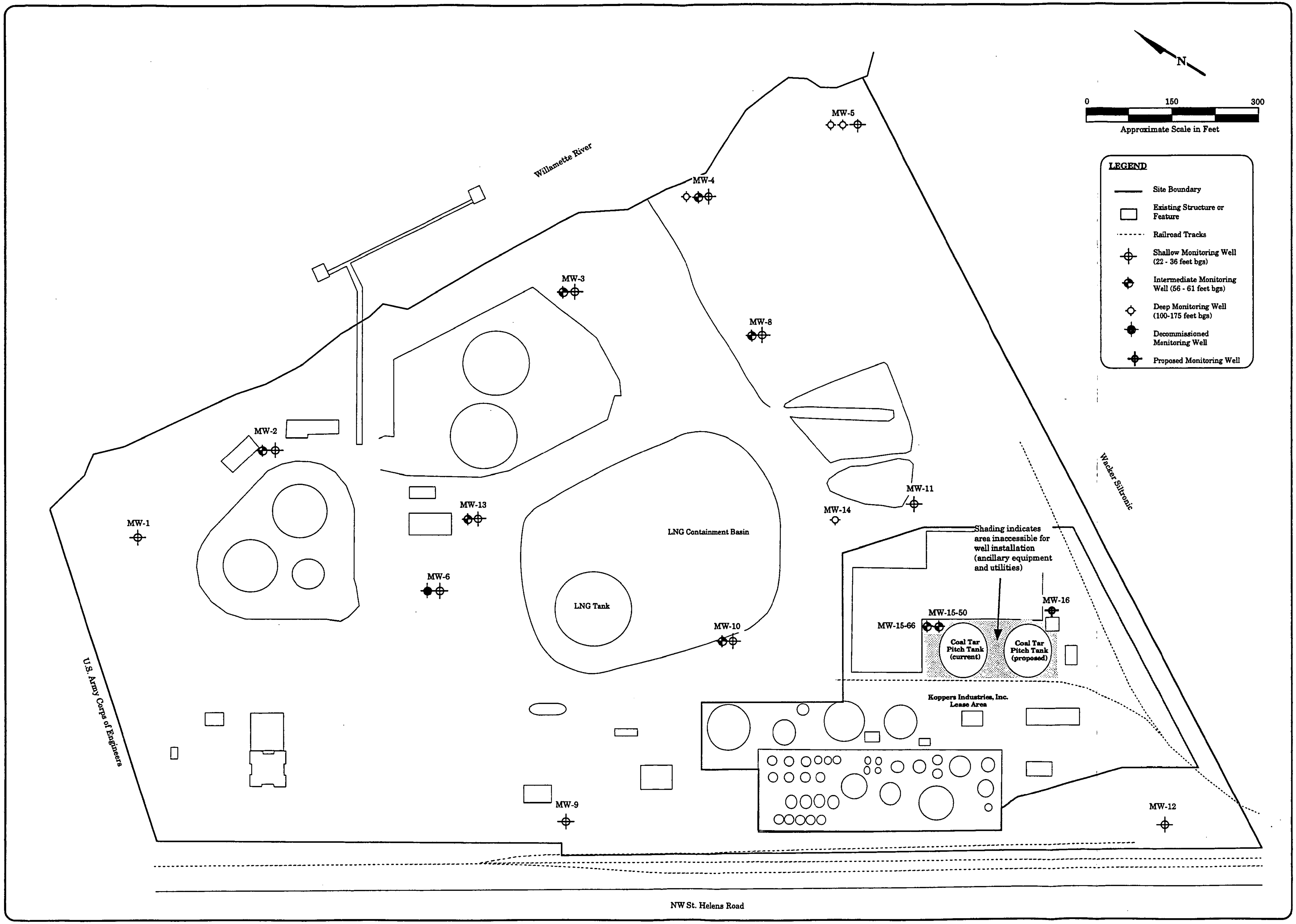


Figure
1

Site Map

Remedial Investigation
Northwest Natural - Gasco Facility
7900 NW St. Helens Road
Portland, Oregon

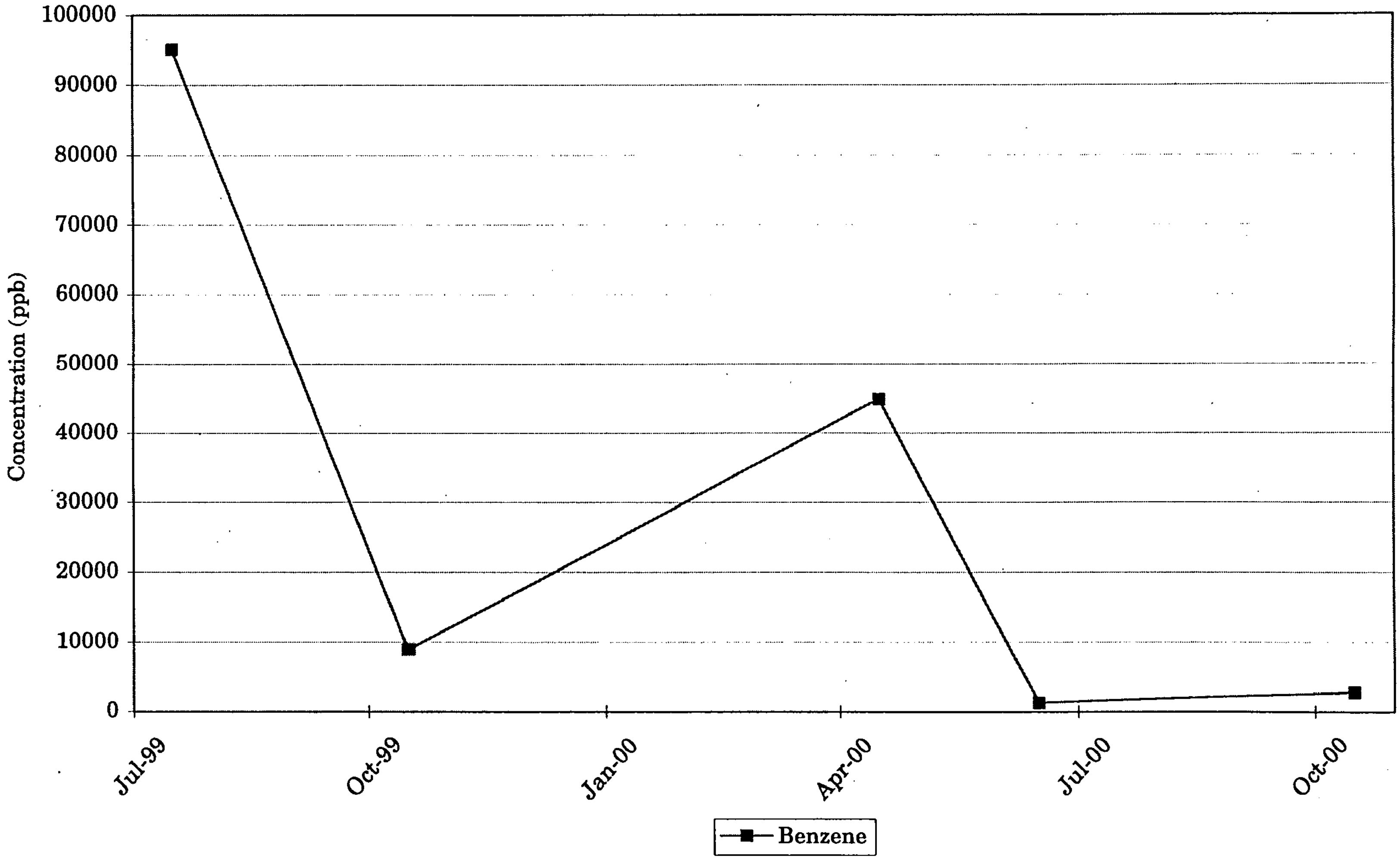
HAHN & ASSOCIATES, INC.
ENVIRONMENTAL MANAGEMENT
434 NW SIXTH AVENUE, SUITE 203
PORTLAND, OREGON 97209
503/796-0717

October 2000

Project No.
2708

Koppers021201

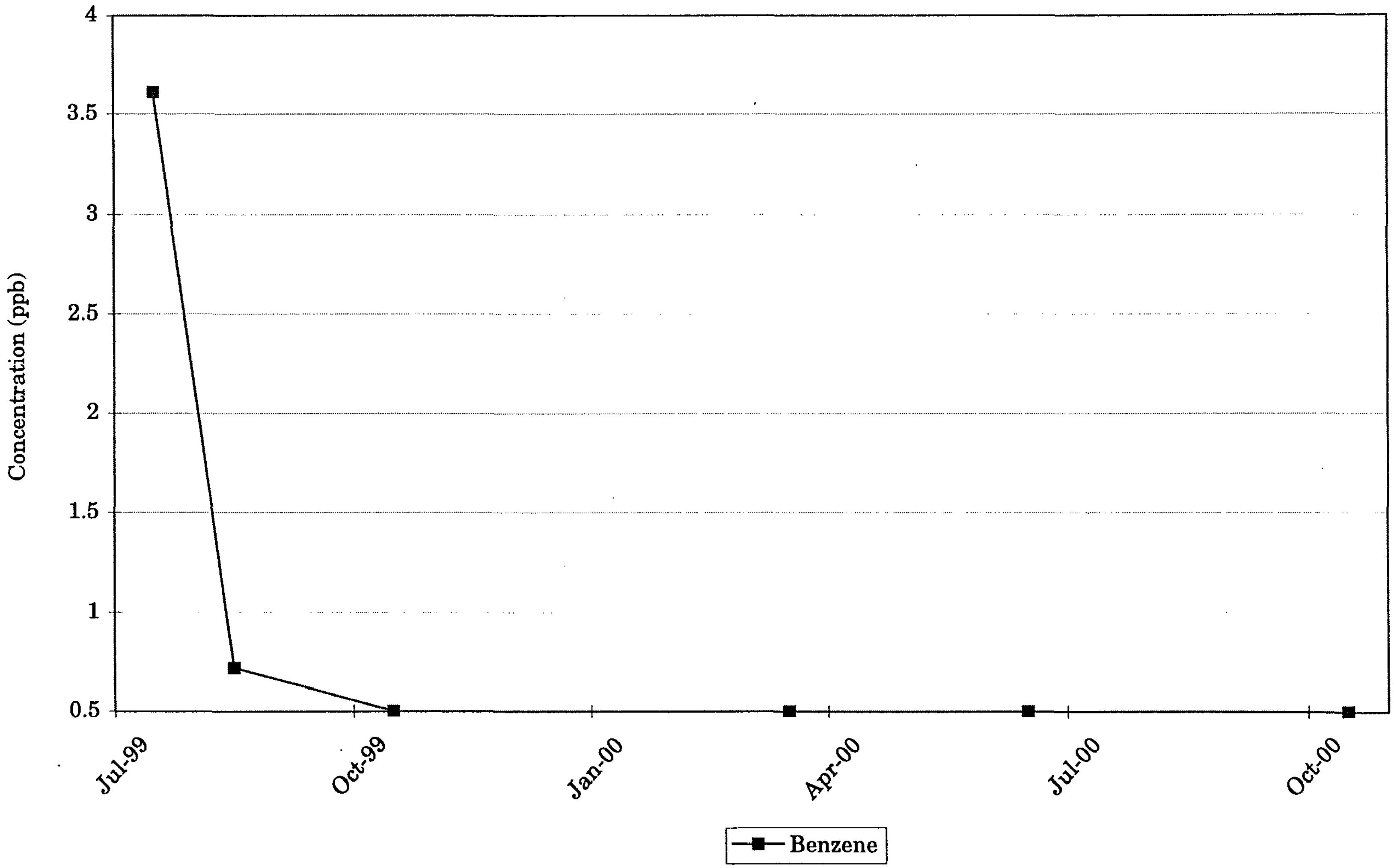
Figure 2
Benzene Concentration through Time
Monitoring Well MW-15-50
NW Natural - Gasco Facility



Updated: 11/1/00: RBE
File:2708 GW conc graphs

HAHN AND ASSOCIATES, INC.
Project No. 2708

Figure 3
Benzene Concentration through Time
Monitoring Well MW-15-66
NW Natural - Gasco Facility

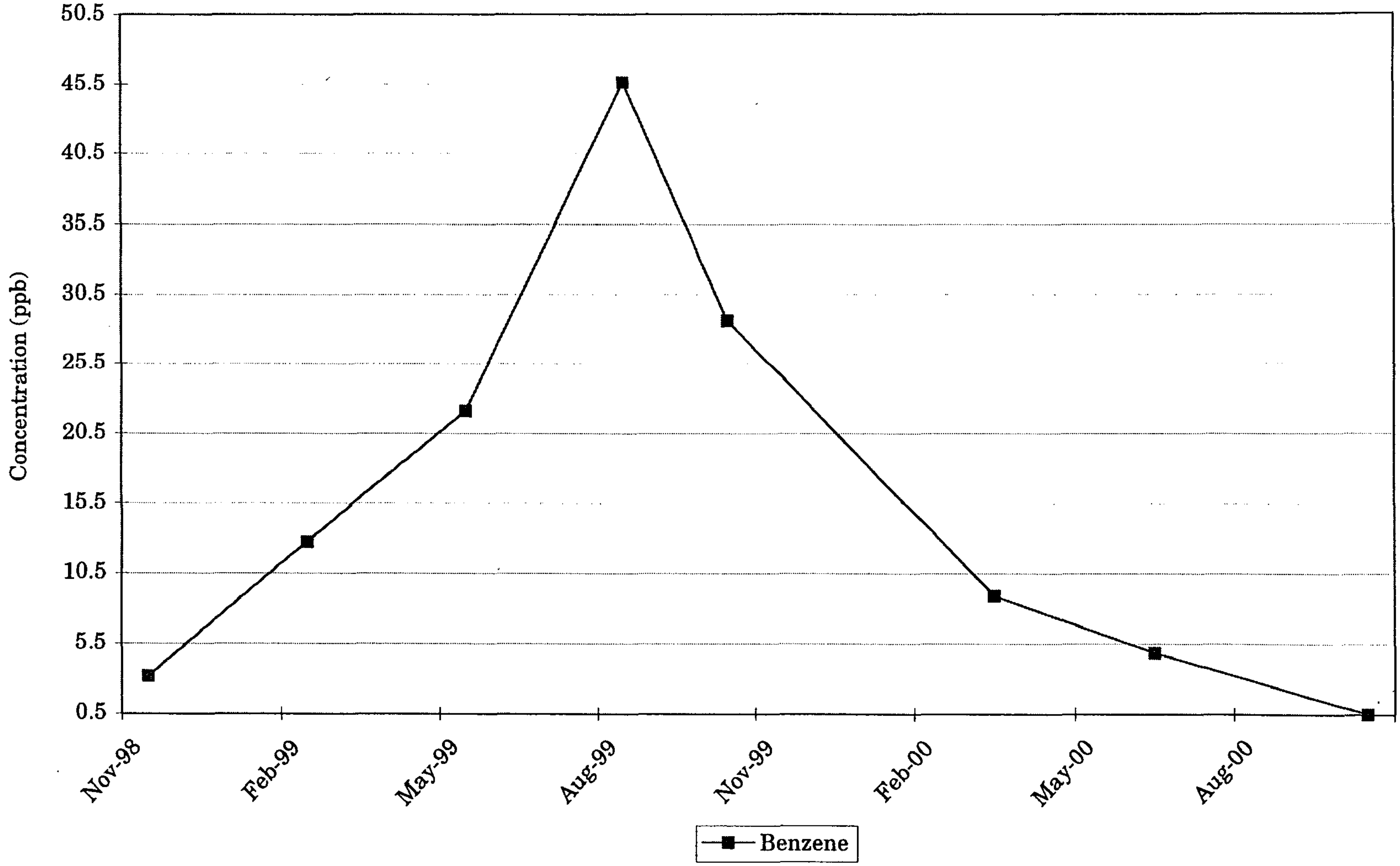


Updated: 11/1/00 RBE
File: 2708 GW conc graphs

HAHN AND ASSOCIATES, INC.
Project No. 2708

Koppers021203

Figure 4
Benzene Concentation through Time
Monitoring Well MW-14-110
NW Natural - Gasco Facility



Koppers021204

Updated: 11/1/00: RBE
File: 2708 GW conc graphs

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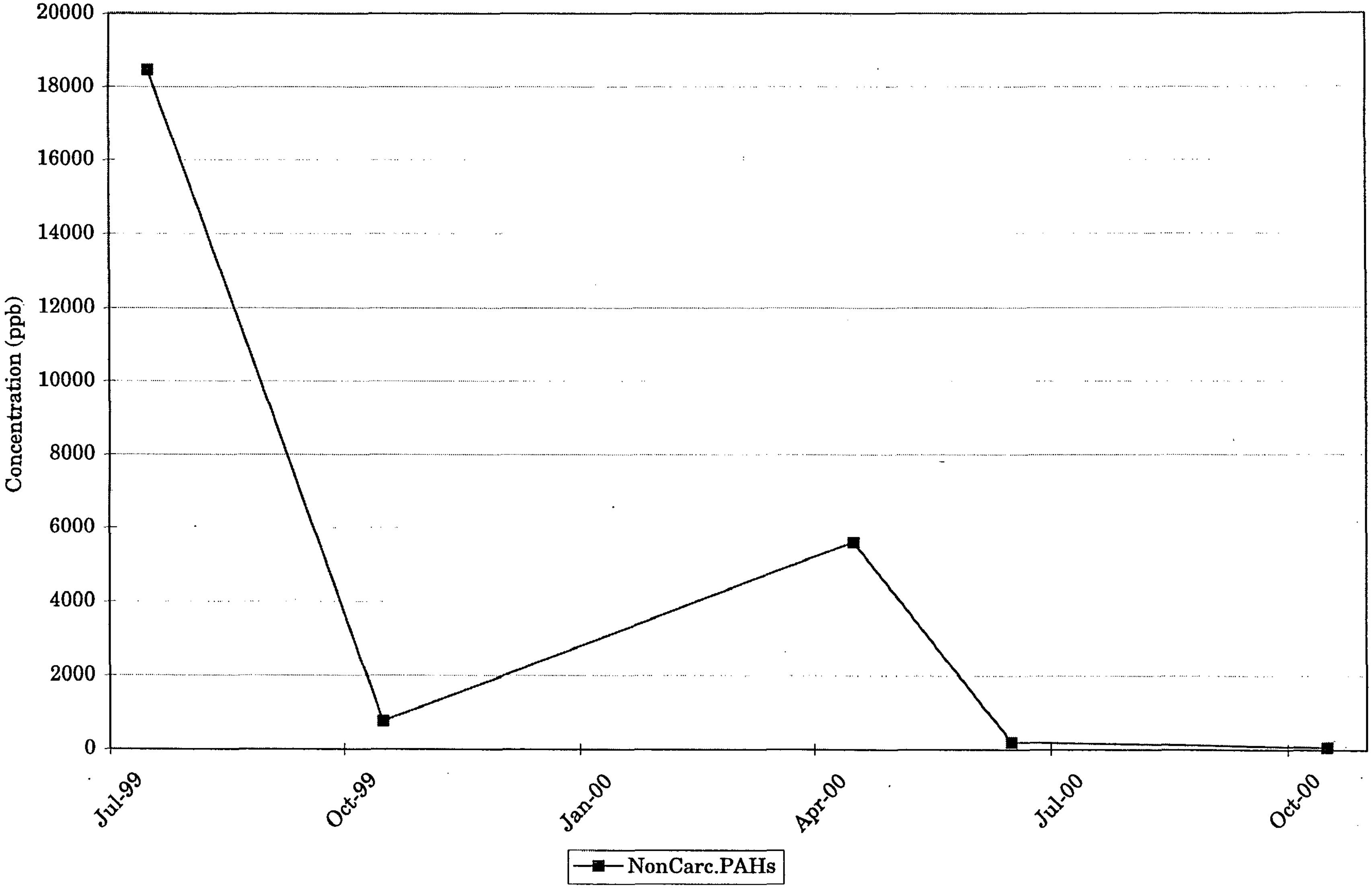
Project No. 2708

Figure 5
Total Non-Carcinogenic PAH Concentration through Time
Monitoring Well MW-15-50
NW Natural - Gasco Facility



Koppers021205

Updated: 11/1/00 RBE
File: 2708 GW conc graphs

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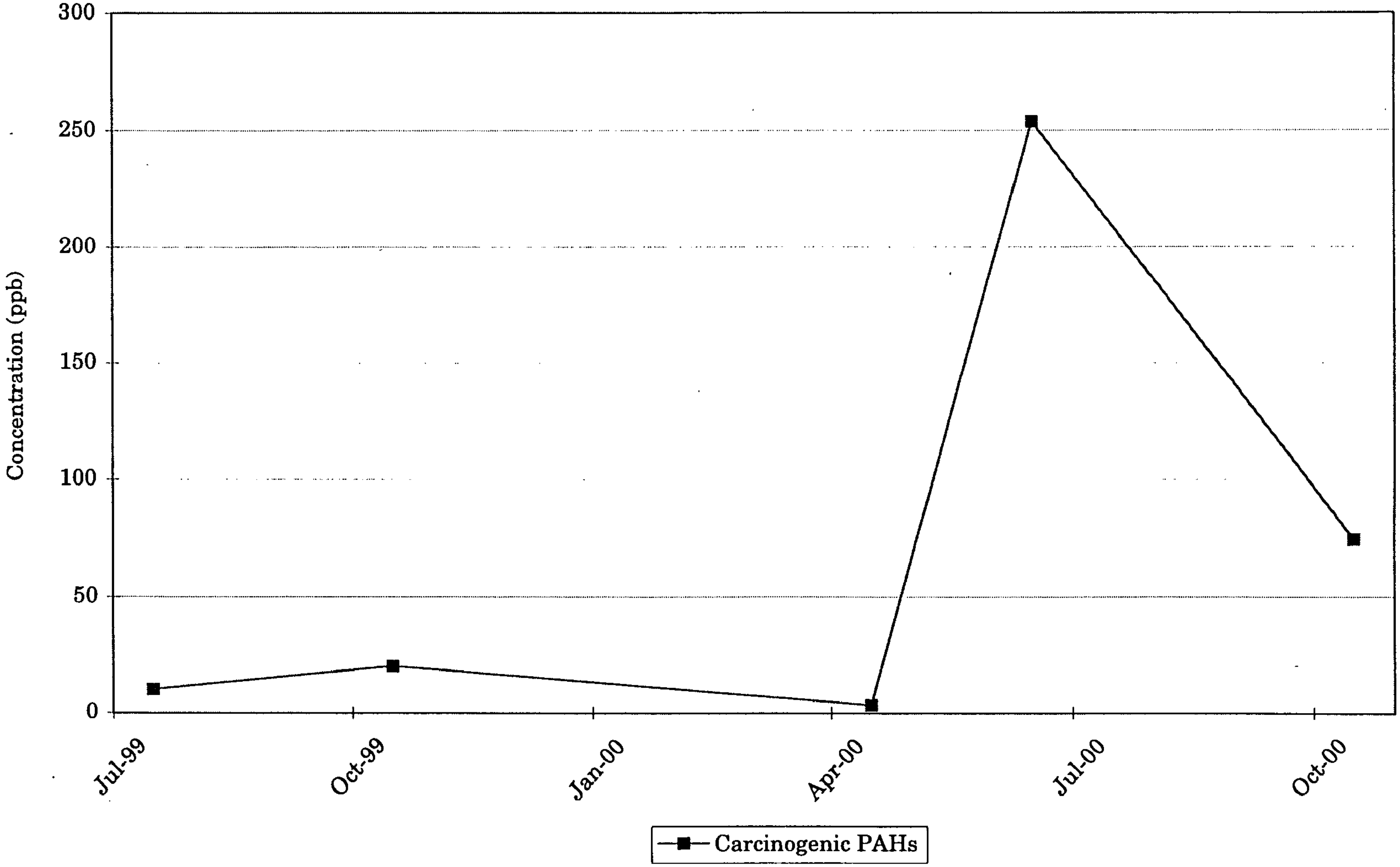
Figure 6
Total Carcinogenic PAH Concentration through Time
Monitoring Well MW-15-50
NW Natural - Gasco Facility

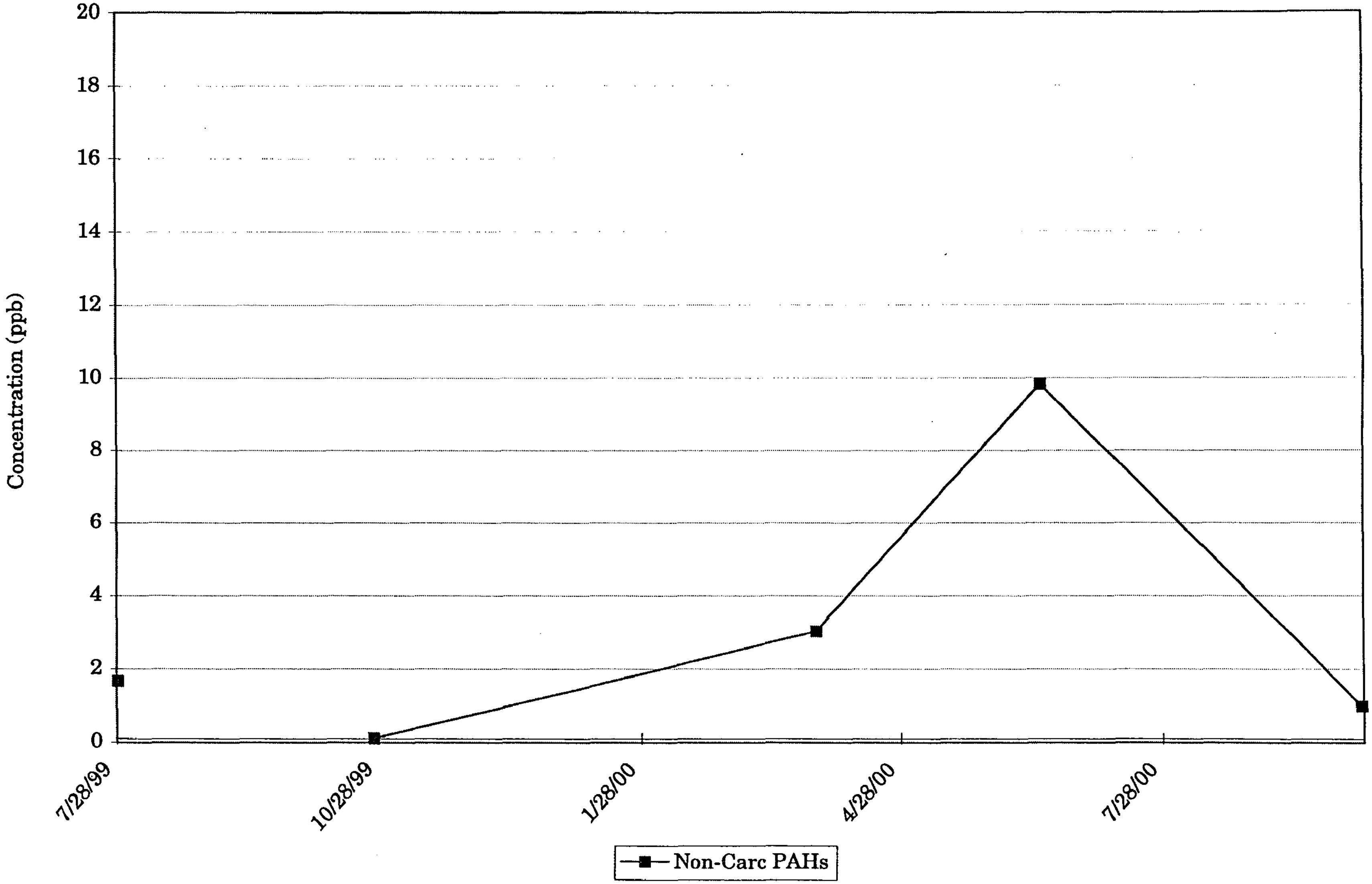


Updated: 11/1/00: RBE
File:2708 GW conc graphs

HAHN AND ASSOCIATES, INC.
Project No. 2708

Koppers021206

Figure 7
Total Non-Carcinogenic PAH Concentration through Time
Monitoring Well MW-15-66
NW Natural - Gasco Facility

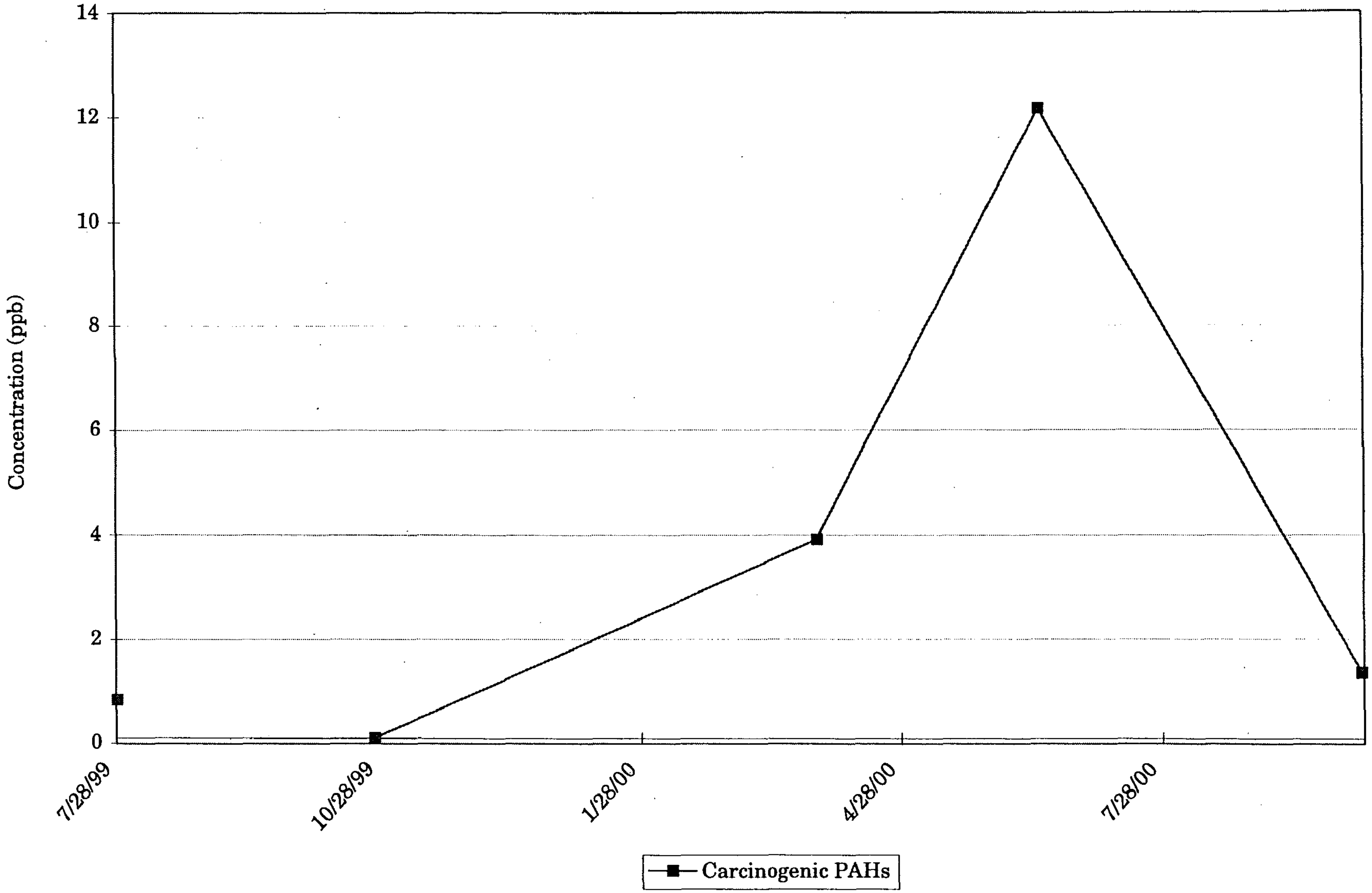


Koppers021207

Updated: 11/1/00 RBE
File: 2708 GW conc graphs

HAHN AND ASSOCIATES, INC.
Project No. 2708

Figure 8
Total Carcinogenic PAH Concentrationthrough Time
Monitoring Well MW-15-66
NW Natural - Gasco Facility

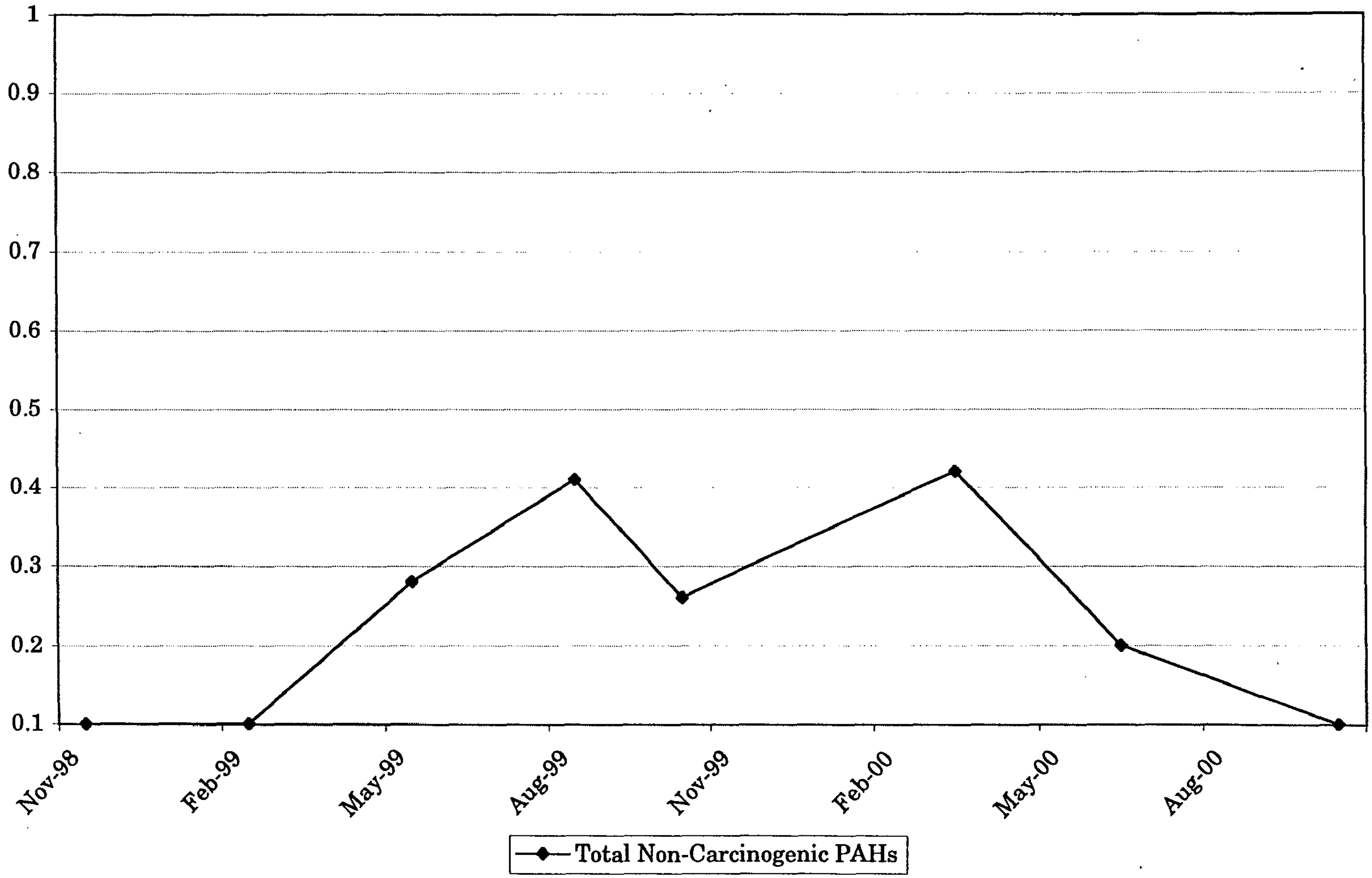


Updated: 11/1/00 RBE
File: 2708 GW conc graphs

HAHN AND ASSOCIATES, INC.
Project No. 2708

Koppers021208

Figure 9
Total Non-Carcinogenic PAH Concentration through Time
Monitoring Well MW-14-110
NW Natural - Gasco Facility



Updated: 11/1/00: RBE
File: 2708 GW conc graphs

HAHN AND ASSOCIATES, INC.
Project No. 2708

Koppers021209

RECEIVED

NOV - 3 2000

KOPPERS INDS, INC.
PORTLAND OR

Date: 6/26/00 5:16 PM
Sender: Amos Kamerer
To: Jim Dietz; Traci Self; Mark Cilley
Priority: Normal
Subject: ODEQ Test Wells

Separately, I am faxing you a copy of the latest quarterly report from Rob Ede, Hahn and Assoc. on the ODEQ test wells.

I was very surprised to see the April results on the shallow well, after my talk with Rob a couple of weeks ago, and my resulting e-mail to all of you. I called Rob about this, and he said that I must have misunderstood him, he does not recall saying that the data from this sample only showed " a slight upward drift". Obviously, we disagreed.

Regardless of this misunderstanding, he made two additional comments. First, that he will have the test results from the sample taken on June 15th within the next week, and that he would call me promptly with them. At that time we will have a better feel for what, if anything is happening. Second, that regardless of the results from this 6/15 sample, that when you look at all 4 quarters of data, that it will be inconclusive, because there was no data from those wells prior to driving the piling, to compare it to. He suggested that perhaps, in this regard, we should think about putting in some new down-gradient wells for the new tank, prior to driving the piling, as this is something that the ODEQ may ask for, anyway. I said that based on the location of the new tank, next the current tank, and the fact that none of us wishes to put any wells in the pencil pitch building, I don't know where you would put any new wells. Plus, that any new wells close to the current tank, would or probably could have been effected by the driving of the original piles, anyway.

Previously, Rob has said that nothing that is being seem from these new well's is going to effect their ultimate remediation for the site, anyway. This is the position that needs to be taken with ODEQ regarding our future expansion, in my mind.

As a result of this, I have put in a call to the new Environmental Manager with NW Natural, Bob Wyatt. He reports to Sandy and I met him for the first time at the Grand Opening. I think that this is the perfect time to get him on board concerning all of this and our long term plans for the terminal and just what we see as NWN's part in supporting us, in all of this.

I'll keep you posted.

Amos

HAHN AND ASSOCIATES, INC.
ENVIRONMENTAL CONSULTANTS

RECEIVED

JUN 26 2000

KOPPERS INDS, INC.
PORTLAND OR

June 23, 2000

Mr. Amos Kamerer
Koppers Industries, Inc.
7540 NW St. Helens Road
Portland, Oregon 97210-3663

HAI Project #2708

SUBJECT: Groundwater Quality Data, Above-Ground Storage Tank Support Piling Monitoring, Koppers Lease Area, Northwest Natural-Gasco Facility, 7900 NW St. Helens Road, Portland, Oregon

Dear Mr. Kamerer:

Enclosed please find a summary of available groundwater quality data (Tables 1 and 2) as obtained from wells at the Gasco site that monitor groundwater conditions down-gradient from the new coal tar pitch above-ground tank that was constructed at Koppers Industries, Inc. (Figure 1).

As you are aware, monitoring wells MW-15-50, MW-15-66, and MW-14-110 (all down-gradient of the tank foundation pilings) are being monitored on a quarterly sampling frequency as per a December 14, 1999 assessment plan[1] that has been implemented such that an evaluation of environmental impacts associated with piling construction (pilings were driven in May 1999) for the new coal tar pitch tank may be completed.

As per the assessment plan, water quality trends at the referenced wells will be evaluated after collection of water quality data for one year (to be completed pending receipt of data from the June 15, 2000 sampling event). The next sampling event at the site to include monitoring wells MW-15-50, MW-15-66, and MW-14-110 will occur during September 2000.

If there are any comments or questions, please contact either the undersigned.

Sincerely,

Robert Ede
Sr. Project Manager

c: Mr. Bob Wyatt, NW Natural
Mr. Richard Bach, Stoel Rives, LLP
Mr. Steve Cappellino, Anchor Environmental LLC

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[1] Hahn and Associates, Inc. (1999), Proposed Assessment Plan, Above-Ground Storage Tank Support Pilings, Koppers Lease Area, Northwest Natural Lease Area, Northwest Natural-Gasco Facility, 7900 NW St. Helens Road, Portland, Oregon (Ede to Blischke, December 14, 1999).

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503/796-0717 OFFICE • 503/227-2209 FAX

Table 1 - Summary of Historical Analytical Results for Groundwater Samples: BTEX, Total PAHs, Total Phenols, and Cyanide (December 1995 to Present)
Koppers Industries Coal Tar Pitch Monitoring Network

Remedial Investigation
Northwest Natural - Gasco Facility
Portland, Oregon

Project No. 2708

Well Number	HAI Sample Number[1]	Chain of Custody Number	Sample Date	Analytical Results: EPA Method 8020 ug/l (ppb)					EPA Method 8270 SIM ug/l (ppb)		EPA 9010 mg/l (ppm)	EPA 901 mg/l (ppm)	EPA 8270 ug/l (ppb)
				Benzene	Toluene	Ethyl benzene	Xylenes	Total BTEX	Carcinogenic PAHs	Total PAHs	Total Cyanide	Amenable Cyanide	Total Phenols
MW-14-110	981116-MW14-110-06	2708-W037	16-Nov-98	**3.2**	ND>0.5	ND>0.5	ND>1.5	3.2	ND	ND	**0.05**		
	990216-MW14-110-005	2708-W042	16-Feb-99	**12.7**	ND>0.5	0.6	ND>1.5	13.3	ND	0.11	**0.04**	ND>0.02	
	990512-MW14-110-09	2708-W045	12-May-99	**22.1**	ND>0.5	1.88	2.4	26.4	ND	0.28	**0.03**	0.03	
	990823-MW14-110-06	2708-W049	23-Aug-99	**45.6**	0.75	1.85	2.09	50.3	ND	0.41	**0.05**	ND>0.02	
	991027-MW14-110-09	2708-W055	27-Oct-99	**28.6**	0.81	1.45	ND>1.5	30.9	ND	0.26	**0.04**	ND>0.02	
	991027-MW14-110-10	2708-W055	27-Oct-99	**29.7**	0.57	1.52	ND>1.5	31.8	ND	0.27	**0.03**	ND>0.02	
	000329-MW14-110-110	2708-W060	29-Mar-00	**8.9**	0.5	0.83	ND>1.5	10.2	ND	0.42	**0.03**	ND>0.02	
MW-15-50	990728-MW15-50-04	2708-W048	28-Jul-99	**95,100.**	863.	223.	**2,420.**	98,606.	ND	18,460.	ND>0.020	ND>0.02	
	991029-MW15-50-25	2708-W057	29-Oct-99	**8,910.**	134.	59.2	500.	9,603.2	ND	762.	**0.15**	ND>0.02	
	000403-MW15-50-125	2708-W062	3-Apr-00	**44,800.**	**620.**	222.	**2,300.**	47,942.	**3.31**	5,611.	**0.07**	ND>0.02	
MW-15-66	990728-MW15-66-03	2708-W048	28-Jul-99	**3.61**	ND>0.5	ND>0.5	ND>1.5	3.6	0.83	3.	ND>0.020	ND>0.02	
	990823-MW15-66-04	2708-W050	23-Aug-99	**0.72**	ND>0.5	ND>0.5	ND>1.5	0.7					
	991026-MW15-66-07	2708-W054	26-Oct-99	ND>0.5	ND>0.5	ND>0.5	ND>1.5	ND	ND	ND	ND>0.020	ND>0.02	
	000329-MW15-66-108	2708-W060	29-Mar-00	ND>0.5	ND>0.5	ND>0.5	ND>1.5	ND	**3.91**	7.	ND>0.02	ND>0.02	
EPA Maximum Contaminant Levels (MCLs) for Drinking Water				5.	1,000.	700.	10,000.	#	#	#	0.2	#	#
EPA Region 9 Preliminary Remediation Goals (PRGs) for Tap Water				0.39	720.	1,300.	1,400.	#	#	#	#	0.73	#
DEQ Ambient Water Quality Criteria (AWQC) for Surface Water[2]				40.[3]	424.[3]	1,400.[3]	#	#	0.031[4]	#	0.0052[4]	#	#

Note:
BTEX = benzene, toluene, ethylbenzene, and xylenes
DEQ = Oregon Department of Environmental Quality
EPA = U.S. Environmental Protection Agency
mg/l = milligrams/liter
ND = not detected above detection limit indicated
PAHs = polynuclear aromatic hydrocarbons
ppb = parts per billion
ppm = parts per million
ug/l = micrograms per liter
= Reference Level not established
Bold and shaded = Detected above Lowest Identified Reference Level

1 = Sample number prefix: 2708-
2 = Reference Level indicated is the lowest guidance value provided in the Ambient Water Quality Criteria (OAR 340-41) based on Fresh Acute, Fresh Chronic (Aquatic Life Protection) and Fish Consumption (Human Health Protection)
3 = Reference Level based on Aquatic Fresh Chronic Criteria of AWQC
4 = Reference Level based on Human Fish Consumption Criteria of AWQC

Koppers021213

Table 2 - Summary of Historical Analytical Results for Groundwater Samples: PAHs by EPA Method 8270 (December 1995 to Present)
Koppers Industries Coal Tar Pitch Monitoring Network

Remedial Investigation
Northwest Natural - Gasco Facility
Portland, Oregon

Project No. 2708

PAHs by EPA Method 8270 (SIM)				Analytical Results ug/l (ppb)																	
				Carcinogenic PAHs							Non-carcinogenic PAHs										
Well Number	Sample Number[1]	Chain of Custody Number	Sample Date	Benzo (a) anthracene	Benzo (b) fluoranthene	Benzo (k) fluoranthene	Benzo (a) pyrene	Chrysene	Dibenzo (ah) anthracene	Indeno (1,2,3-cd) pyrene	Acenaphthene	Acenaphthylene	Anthracene	Benzo (ghi) perylene	Fluoranthene	Fluorene	Naphthalene	Phenanthrene	Pyrene	Total Carcinogenic PAHs	Total PAHs
MW-14-110	981116-MW14-110-06	2708-W037	16-Nov-98	ND [a]	ND [a]	ND [a]	ND [a]	ND [a]	ND [a]	ND [a]	ND [a]	ND [a]	ND [a]	ND [a]	ND [a]	ND [a]	ND [a]	ND [a]	ND [a]	ND	ND
	990216-MW14-110-005	2708-W042	16-Feb-99	ND [a]	ND [a]	ND [a]	ND [a]	ND [a]	ND [a]	ND [a]	0.11	ND [a]	ND [a]	ND [a]	ND [a]	ND [a]	ND [a]	ND [a]	ND [a]	ND	0.1
	990512-MW14-110-09	2708-W045	12-May-99	ND [a]	ND [a]	ND [a]	ND [a]	ND [a]	ND [a]	ND [a]	0.14	ND [a]	ND [a]	ND [a]	ND [a]	ND [a]	0.14	ND [a]	ND [a]	ND	0.3
	990823-MW14-110-06	2708-W049	23-Aug-99	ND [a]	ND [a]	ND [a]	ND [a]	ND [a]	ND [a]	ND [a]	0.29	ND [a]	ND [a]	ND [a]	ND [a]	ND [a]	0.12	ND [a]	ND [a]	ND	0.4
	991027-MW14-110-09	2708-W055	27-Oct-99	ND [a]	ND [a]	ND [a]	ND [a]	ND [a]	ND [a]	ND [a]	0.26	ND [a]	ND [a]	ND [a]	ND [a]	ND [a]	ND [a]	ND [a]	ND [a]	ND	0.3
	991027-MW14-110-09	2708-W055	27-Oct-99	ND [a]	ND [a]	ND [a]	ND [a]	ND [a]	ND [a]	ND [a]	0.26	ND [a]	ND [a]	ND [a]	ND [a]	ND [a]	ND [a]	ND [a]	ND [a]	ND	0.3
	000329-MW14-110-110	2708-W060	29-Mar-00	ND [a]	ND [a]	ND [a]	ND [a]	ND [a]	ND [a]	ND [a]	0.42	ND [a]	ND [a]	ND [a]	ND [a]	ND [a]	ND [a]	ND [a]	ND [a]	ND	0.4
MW-15-50	990728-MW15-50-04	2708-W048	28-Jul-99	ND [d]	ND [d]	ND [d]	ND [d]	ND [d]	ND [d]	ND [d]	50.	8,510.	ND [d]	ND [d]	ND [d]	83.	9,700.	117.	ND [d]	ND	18,460.
	991029-MW15-50-25	2708-W057	29-Oct-99	ND [a]	ND [a]	ND [a]	ND [a]	ND [a]	ND [a]	ND [a]	ND [a]	20.	ND [a]	ND [a]	ND [a]	ND [a]	716.	26.	ND [a]	ND	762.
	000403-MW15-50-125	2708-W062	3-Apr-00	**0.79**	**0.51**	0.49	**0.55**	0.73	ND [a]	**0.24**	22.	41.6	2.91	0.25	6.01	23.6	**5,480.**	25.9	5.16	**3.31**	5,611.
MW-15-66	990728-MW15-66-03	2708-W048	28-Jul-99	**0.15**	**0.26**	ND [a]	**0.16**	0.15	ND [a]	**0.11**	0.11	ND [a]	ND [a]	0.14	0.3	ND [a]	0.57	0.17	0.34	0.83	2.5
	991026-MW15-66-07	2708-W054	26-Oct-99	ND [a]	ND [a]	ND [a]	ND [a]	ND [a]	ND [a]	ND [a]	ND [a]	ND [a]	ND [a]	ND [a]	ND [a]	ND [a]	ND [a]	ND [a]	ND [a]	ND	ND
	000329-MW15-66-108	2708-W060	29-Mar-00	**0.57**	**0.59**	0.6	**0.77**	0.67	**0.18**	**0.53**	ND [a]	ND [a]	0.11	0.66	0.96	ND [a]	ND [a]	0.33	0.96	**3.91**	6.9
EPA Maximum Contaminant Levels (MCLs) for Drinking Water				#	#	#	2.	#	#	#	#	#	#	#	#	#	#	#	#	#	#
EPA Region 9 Preliminary Remedial Goals (PRGs) for Tap Water				0.09	0.09	0.92	0.01	9.2	0.01	0.09	365.	#	1,825.	#	1,460.	243.	243.	#	182.	#	#
DEQ Ambient Water Quality Criteria (AWQC) for Surface Water[2]				#	#	#	#	#	#	#	520.[3]	#	#	#	54.[4]	#	620.[3]	#	#	0.031[4]	#

Note:
# = Reference Level not established
EPA = U.S. Environmental Protection Agency
ND = not detected above detection limit indicated
ODEQ = Oregon Department of Environmental Quality

PAHs = polynuclear aromatic hydrocarbons
ppb = parts per billion
ug/l = micrograms per liter
Bold and shaded = Detected above lowest identified Reference Level

a = detection limit is 0.1 ug/l (ppb)
b = detection limit is 1. ug/l (ppb)
c = detection limit is 2. ug/l (ppb)
d = detection limit is 10. ug/l (ppb)
e = detection limit is 20. ug/l (ppb)

1 = Sample number prefix: 2708-
2 = Reference Level indicated is the lowest guidance value provided in the Ambient Water Quality Criteria (OAR 340-41) based on Fresh Acute, Fresh Chronic (Aquatic Life Protection) and Fish Consumption Only (Human Health Protection)
3 = Reference Level based on Aquatic Fresh Chronic Criteria of AWQC
4 = Reference Level based on Human Fish Consumption Criteria of AWQC

Koppers021214

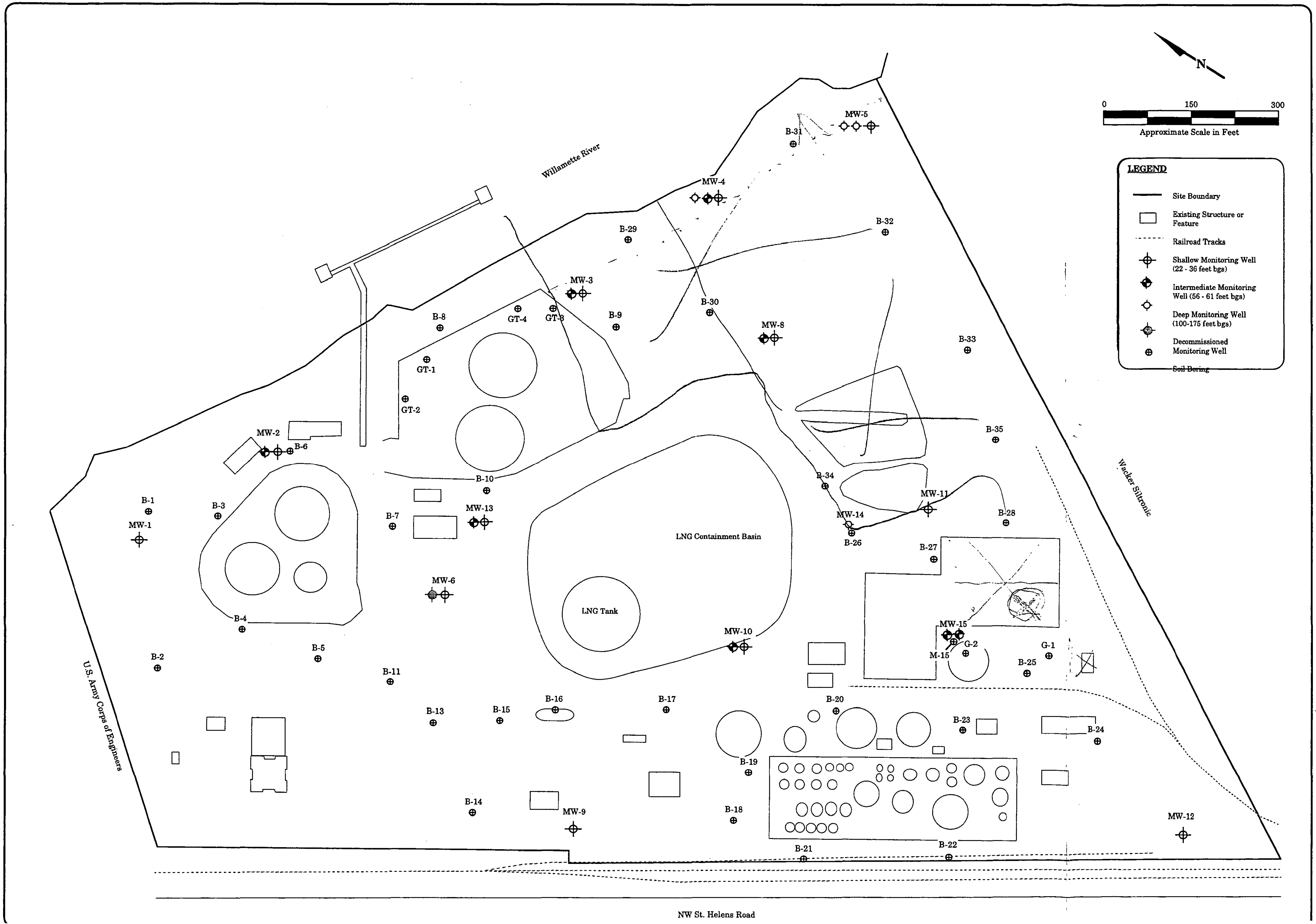

Figure
1

Monitoring Well and Soil Boring Location Map

Remedial Investigation
NW Natural - Gasco Facility
7900 NW St. Helens Road
Portland, Oregon

HAHN & ASSOCIATES, INC.
ENVIRONMENTAL MANAGEMENT
434 NW SIXTH AVENUE, SUITE 203
PORTLAND, OREGON 97209
503/796-0717

May
2000

Project No.
2708

Koppers021215

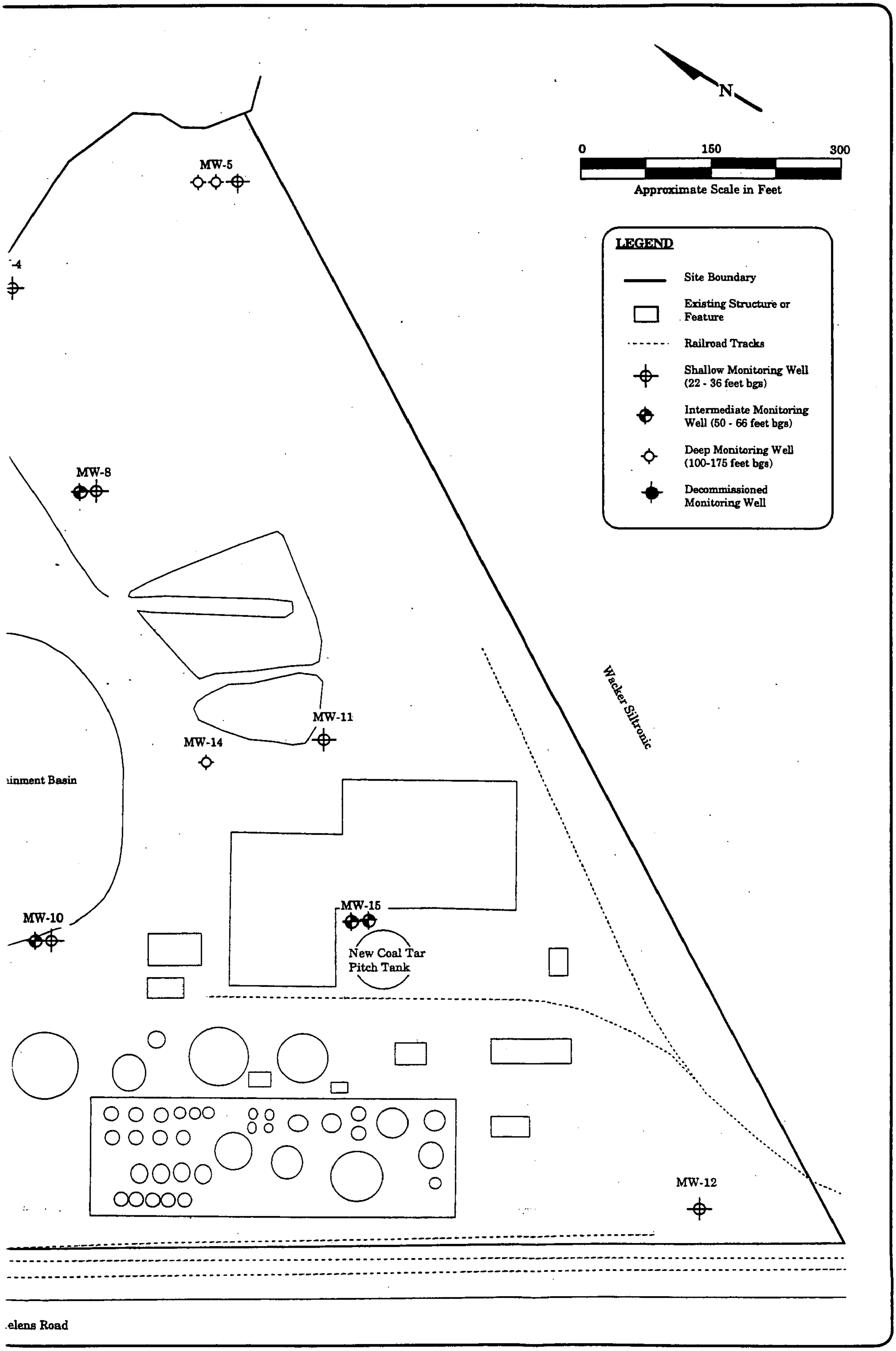

Figure 1

Monitoring Well Location Map

Remedial Investigation
Northwest Natural - Gasco Facility
7900 NW St. Helens Road
Portland, Oregon

HAHN & ASSOCIATES, INC.

ENVIRONMENTAL MANAGEMENT
434 NW SIXTH AVENUE, SUITE 203
PORTLAND, OREGON 97209
503/796-0717

January 2000

Project No. 2708

Koppers021216

Date: 6/14/00 11:40 AM
Sender: Amos Kamerer
To: Jim Dietz; Traci Self; BILL MEISINGER; Mark Cilley
Priority: Normal
Subject: ODEQ Test Wells

Jim,

FYI. I talked to Rob Ede, Hahn and Assoc. today.

I never received any data on the March tests from them, he said that it is a lot of data to put together for the total NWN site and that they will be finished with it this week. The recap report for just the 3 wells involving KII, will be mailed to us next week. He said that there was a slight upward drift in the data from the 50' shallow well, but was still ND on the 66' deep well, which he thinks is more important. He was not sure why, or what would have caused this spike in the shallow well and needless to say, he hopes that it goes away on the next sample, which they will take tomorrow.

I reminded him, and he said that he understands, that our schedule still reflects, based on all of our prior discussions, that the data for the 4 quarters of samples will be given to the ODEQ by the end of July, and that barring some unforeseen problem, that we would have permission back from ODEQ to proceed with the 2nd tank, by the end of August. We need as much time as possible to have this new tank ready for the first KCCC shipment, that is due in the 3rd quarter of 2001. We will not be able to live with any last minute delays, this time.

I will keep you posted.

Amos

HAHN AND ASSOCIATES, INC.
ENVIRONMENTAL MANAGEMENT

March 23, 2000

Mr. Amos Kamerer
Koppers Industries, Inc.
7540 NW St. Helens Road
Portland, Oregon 97210-3663

HAI Project #2708

SUBJECT: Groundwater Quality Data, Above-Ground Storage Tank Support Piling Monitoring, Koppers Lease Area, Northwest Natural-Gasco Facility, 7900 NW St. Helens Road, Portland, Oregon

Dear Mr. Kamerer:

Enclosed please find a summary of available groundwater quality data (Tables 1 and 2) as obtained from wells at the Gasco site that monitor groundwater conditions down-gradient from the new coal tar pitch above-ground tank that was constructed at Koppers (Figure 1).

As you are aware, monitoring wells MW-15-50, MW-15-66, and MW-14-110 (all down-gradient of the tank foundation pilings) are being monitored on a quarterly sampling frequency as per a December 14, 1999 assessment plan[1] that has been implemented such that an evaluation of environmental impacts associated with piling construction (pilings were driven in May 1999) for the new coal tar pitch tank may be completed.

As per the referenced plan, water quality trends at the referenced wells will be evaluated after completing data collection activities for the period of one year (i.e., subsequent to the August 2000 event). The next sampling event at the site to include monitoring wells MW-15-50, MW-15-66, and MW-14-110 is scheduled to occur during the week of March 27, 2000.

If there are any comments or questions, please contact either the undersigned.

Sincerely,

Robert Ede

Robert Ede
Sr. Project Manager

RECEIVED
MAR 24 2000
KOPPERS INDS, INC.
PORTLAND OR

c: Ms. Sandra Hart, Northwest Natural
Mr. Bob Wyatt, Northwest Natural
Mr. Richard Bach, Stoel Rives, LLP
Mr. Tom Schadt, Anchor Environmental LLC

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[1] Hahn and Associates, Inc. (1999), Proposed Assessment Plan, Above-Ground Storage Tank Support Pilings, Koppers Lease Area, Northwest Natural Lease Area, Northwest Natural-Gasco Facility, 7900 NW St. Helens Road, Portland, Oregon (Ede to Blischke, December 14, 1999).

Table 1 - Summary of Historical Analytical Results for Groundwater Samples: BTEX, Total PAHs, Total Phenols, and Cyanide (December 1995 to Present)
Koppers Coal Tar Pitch Monitoring Network

Remedial Investigation
Northwest Natural - Gasco Facility
Portland, Oregon

Project No. 2708

Well Number	HAI Sample Number[1]	Chain of Custody Number	Sample Date	Analytical Results: EPA Method 8020 ug/l (ppb) Benzene	Toluene	Ethyl benzene	Xylenes	Total BTEX	EPA Method 8270 SIM ug/l (ppb) Carcinogenic PAHs	Total PAHs	EPA 9010 mg/l (ppm) Total Cyanide	EPA 901 mg/l (ppm) Amenable Cyanide	EPA 8270 ug/l (ppb) Total Phenols
MW-14-110	981116-MW14-110-06	2708-W037	16-Nov-98	**3.2**	ND>0.5	ND>0.5	ND>1.5	3.2	ND	ND	**0.05**		
	990216-MW14-110-005	2708-W042	16-Feb-99	**12.7**	ND>0.5	0.6	ND>1.5	13.3	ND	0.11	**0.04**	ND>0.02	
	990512-MW14-110-09	2708-W045	12-May-99	**22.1**	ND>0.5	1.88	2.4	26.4	ND	0.28	**0.03**	0.03	
	990823-MW14-110-06	2708-W049	23-Aug-99	**45.6**	0.75	1.85	2.09	50.3	ND	0.41	**0.05**	ND>0.02	
	991027-MW14-110-09	2708-W055	27-Oct-99	**28.6**	0.81	1.45	ND>1.5	30.9	ND	0.26	**0.04**	ND>0.02	
	991027-MW14-110-10	2708-W055	27-Oct-99	**29.7**	0.57	1.52	ND>1.5	31.8	ND	0.27	**0.03**	ND>0.02	
MW-15-50	990728-MW15-50-04	2708-W048	28-Jul-99	**95,100.**	863.	223.	2,420.	98,606.	ND	18,460.	ND>0.020	ND>0.02	
	991029-MW15-50-25	2708-W057	29-Oct-99	**8,910.**	134.	59.2	500.	9,603.2	ND	762.	**0.15**	ND>0.02	
MW-15-66	990728-MW15-66-03	2708-W048	28-Jul-99	**3.61**	ND>0.5	ND>0.5	ND>1.5	3.6	0.83	3.	ND>0.020	ND>0.02	
	990823-MW15-66-04	2708-W050	23-Aug-99	**0.72**	ND>0.5	ND>0.5	ND>1.5	0.7					
	991026-MW15-66-07	2708-W054	26-Oct-99	ND>0.5	ND>0.5	ND>0.5	ND>1.5	ND	ND	ND	ND>0.020	ND>0.02	
EPA Maximum Contaminant Levels (MCLs) for Drinking Water				5.	1,000.	700.	10,000.	#	#	#	0.2	#	#
EPA Region 9 Preliminary Remediation Goals (PRGs) for Tap Water				0.39	720.	1,300.	1,400.	#	#	#	#	0.73	#
DEQ Ambient Water Quality Criteria (AWQC) for Surface Water[2]				40.[3]	424.[3]	1,400.[3]	#	#	0.031[4]	#	0.0052[4]	#	#

Note:
BTEX = benzene, toluene, ethylbenzene, and xylenes
DEQ = Oregon Department of Environmental Quality
EPA = U.S. Environmental Protection Agency
mg/l = milligrams/liter
ND = not detected above detection limit indicated
PAHs = polynuclear aromatic hydrocarbons
ppb = parts per billion
ppm = parts per million
ug/l = micrograms per liter
= Reference Level not established
Bold and shaded = Detected above Lowest Identified Reference Level

1 = Sample number prefix: 2708-
2 = Reference Level indicated is the lowest guidance value provided in the Ambient Water Quality Criteria (OAR 340-41) based on Fresh Acute, Fresh Chronic (Aquatic Life Protection) and Fish Consumption (Human Health Protection)
3 = Reference Level based on Aquatic Fresh Chronic Criteria of AWQC
4 = Reference Level based on Human Fish Consumption Criteria of AWQC

Koppers021219

Table 2 - Summary of Historical Analytical Results for Groundwater Samples: PAHs by EPA Method 8270 (December 1995 to Present)
Koppers Coal Tar Pitch Monitoring Network

Remedial Investigation
Northwest Natural - Gasco Facility
Portland, Oregon

Project No. 2708

PAHs by EPA Method 8270 (SIM)				Analytical Results ug/l (ppb)																	
				Carcinogenic PAHs							Non-carcinogenic PAHs										
Well Number	Sample Number[1]	Chain of Custody Number	Sample Date	Benzo (a) anthracene	Benzo (b) fluoranthene	Benzo (k) fluoranthene	Benzo (a) pyrene	Chrysene	Dibenzo (ah) anthracene	Indeno (1,2,3-cd) pyrene	Acenaphthene	Acenaphthylene	Anthracene	Benzo (ghi) perylene	Fluoranthene	Fluorene	Naphthalene	Phenanthrene	Pyrene	Total Carcinogenic PAHs	Total PAHs
MW-14-110	981116-MW14-110-06	2708-W037	16-Nov-98	ND[a]	ND[a]	ND[a]	ND[a]	ND[a]	ND[a]	ND[a]	ND[a]	ND[a]	ND[a]	ND[a]	ND[a]	ND[a]	ND[a]	ND[a]	ND[a]	ND	ND
	990216-MW14-110-005	2708-W042	16-Feb-99	ND[a]	ND[a]	ND[a]	ND[a]	ND[a]	ND[a]	ND[a]	0.11	ND[a]	ND[a]	ND[a]	ND[a]	ND[a]	ND[a]	ND[a]	ND[a]	ND	0.1
	990512-MW14-110-09	2708-W045	12-May-99	ND[a]	ND[a]	ND[a]	ND[a]	ND[a]	ND[a]	ND[a]	0.14	ND[a]	ND[a]	ND[a]	ND[a]	ND[a]	0.14	ND[a]	ND[a]	ND	0.3
	990823-MW14-110-06	2708-W049	23-Aug-99	ND[a]	ND[a]	ND[a]	ND[a]	ND[a]	ND[a]	ND[a]	0.29	ND[a]	ND[a]	ND[a]	ND[a]	ND[a]	0.12	ND[a]	ND[a]	ND	0.4
	991027-MW14-110-09	2708-W055	27-Oct-99	ND[a]	ND[a]	ND[a]	ND[a]	ND[a]	ND[a]	ND[a]	0.26	ND[a]	ND[a]	ND[a]	ND[a]	ND[a]	ND[a]	ND[a]	ND[a]	ND	0.3
	991027-MW14-110-09	2708-W055	27-Oct-99	ND[a]	ND[a]	ND[a]	ND[a]	ND[a]	ND[a]	ND[a]	0.26	ND[a]	ND[a]	ND[a]	ND[a]	ND[a]	ND[a]	ND[a]	ND[a]	ND	0.3
MW-15-50	990728-MW15-50-04	2708-W048	28-Jul-99	ND[d]	ND[d]	ND[d]	ND[d]	ND[d]	ND[d]	ND[d]	50.	8,510.	ND[d]	ND[d]	ND[d]	83.	9,700.	117.	ND[d]	ND	18,460.
	991029-MW15-50-25	2708-W057	29-Oct-99	ND[e]	ND[e]	ND[e]	ND[e]	ND[e]	ND[e]	ND[e]	ND[e]	20.	ND[e]	ND[e]	ND[e]	ND[e]	716.	26.	ND[e]	ND	762.
MW-15-66	990728-MW15-66-03	2708-W048	28-Jul-99	**0.15**	**0.26**	ND[a]	**0.16**	0.15	ND[a]	**0.11**	0.11	ND[a]	ND[a]	0.14	0.3	ND[a]	0.57	0.17	0.34	0.83	2.5
	991026-MW15-66-07	2708-W054	26-Oct-99	ND[a]	ND[a]	ND[a]	ND[a]	ND[a]	ND[a]	ND[a]	ND[a]	ND[a]	ND[a]	ND[a]	ND[a]	ND[a]	ND[a]	ND[a]	ND[a]	ND	ND
EPA Maximum Contaminant Levels (MCLs) for Drinking Water				#	#	#	2.	#	#	#	#	#	#	#	#	#	#	#	#	#	#
EPA Region 9 Preliminary Remedial Goals (PRGs) for Tap Water				0.09	0.09	0.92	0.01	9.2	0.01	0.09	365.	#	1,825.	#	1,460.	243.	243.	#	182.	#	#
DEQ Ambient Water Quality Criteria (AWQC) for Surface Water[2]				#	#	#	#	#	#	#	520.[3]	#	#	#	54.[4]	#	620.[3]	#	#	0.031[4]	#

Note: # = Reference Level not established
EPA = U.S. Environmental Protection Agency
ND = not detected above detection limit indicated
ODEQ = Oregon Department of Environmental Quality

PAHs = polynuclear aromatic hydrocarbons
ppb = parts per billion
ug/l = micrograms per liter
Bold and shaded = Detected above lowest identified Reference Level

a = detection limit is 0.1 ug/l (ppb)
b = detection limit is 1. ug/l (ppb)
c = detection limit is 2. ug/l (ppb)
d = detection limit is 10. ug/l (ppb)
e = detection limit is 20. ug/l (ppb)

1 = Sample number prefix: 2708-
2 = Reference Level indicated is the lowest guidance value provided in the Ambient Water Quality Criteria (OAR 340-41) based on Fresh Acute, Fresh Chronic (Aquatic Life Protection) and Fish Consumption Only (Human Health Protection)
3 = Reference Level based on Aquatic Fresh Chronic Criteria of AWQC
4 = Reference Level based on Human Fish Consumption Criteria of AWQC

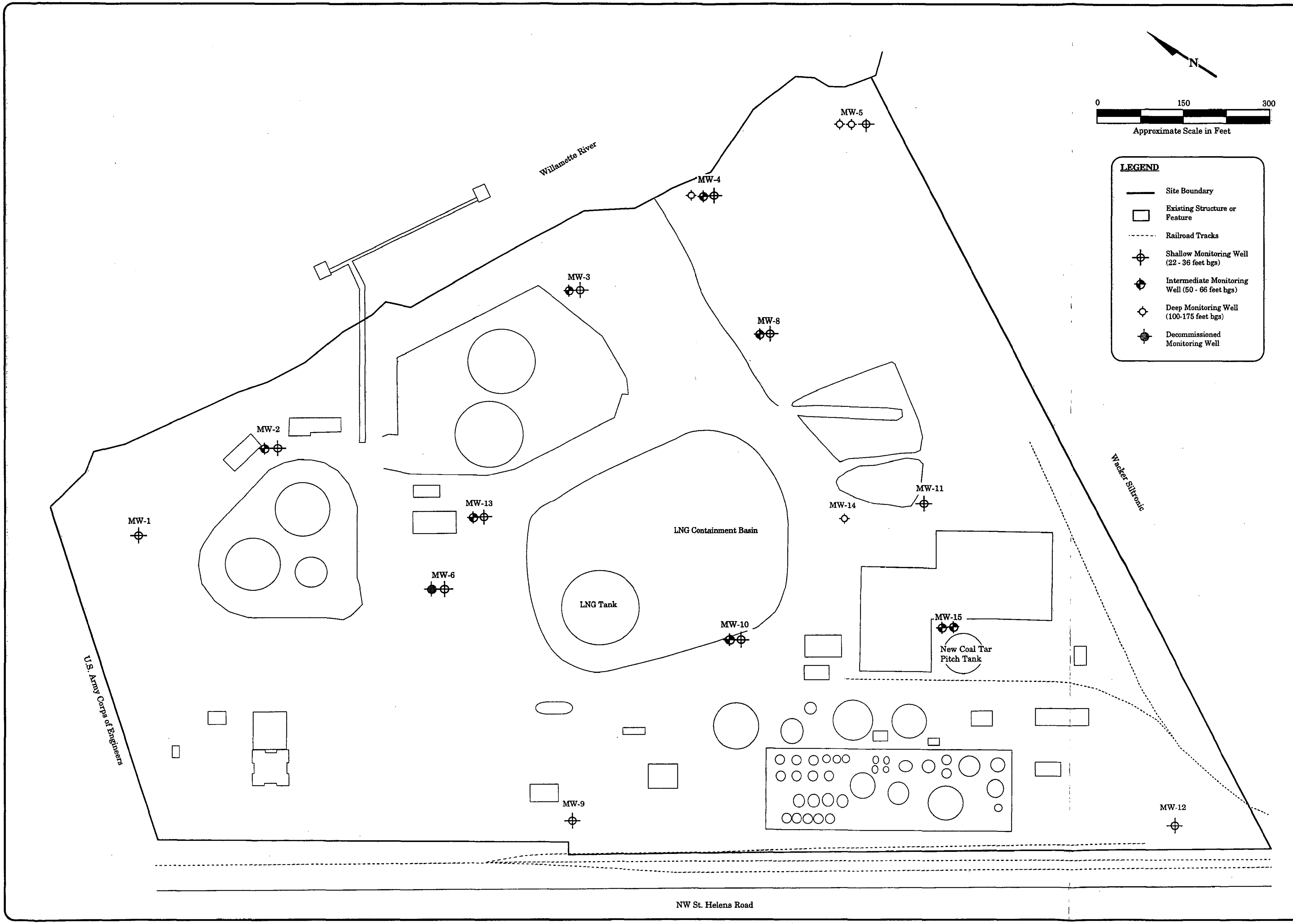

Figure 1

Monitoring Well Location Map

Remedial Investigation
Northwest Natural - Gasco Facility
7900 NW St. Helens Road
Portland, Oregon

HAHN & ASSOCIATES, INC.

ENVIRONMENTAL MANAGEMENT
434 NW SIXTH AVENUE, SUITE 203
PORTLAND, OREGON 97209
503/796-0717

January 2000

Project No. 2708

Koppers021221

Date: 6/27/00 5:05 PM
Sender: Amos Kamerer
To: Jim Dietz; Traci Self; BILL MEISINGER; Mark Cilley
Priority: Normal
Subject: NWN - ODEQ

I had a very good meeting today with Bob Wyatt, Envin. Mgr. NW Natural. Bob is new to NWN, since March of this year. He brings 18 years of experence as a consultant, in dealing with RCRA issues and super fund sites, back East. He was born in Pittsburgh and raised in Eastern PA.

He has a very good feel for the KCI, BEI and KII situation, and how all of that effects us today. He discussed a little bit of their pro-active plans for the site with ODEQ, they would just as soon come to some agreements on remeadiation with them now, rather than sitting and waiting the estimated 18 to 24 months it will now take for the site to finally be listed as a Superfund site. So, he is working very closely with Eric Blishke, ODEQ, on these matters.

He asked that I review the events of last year between KII, NWN and ODEQ regarding the tank foundation review, and that whole matter, wanting to hear KII's take on the matter. I reviewed for him our known growth plans, KCCC and the 2nd tank needing to be ready by the end of the 2nd quarter 2001. Plus, our possible growth plans beyond then, Goldendale and/or others and a 3rd tank some time in year 2002, at the earliest.

We discussed the April test data from Hahn, on the new well. He too, was disappointed but said regardless, KII needs to build our 2nd tank, and there has to be a way to get that done and agreed to by all of the parties, in a timely manner. He said that he tentatively has a meeting with Eric on Thursday of this week and that he would bring up this subject with him, and suggest that perhaps the three of us get together to discuss the matter further, here at the terminal, in the next few weeks. I said that would be fine.

He asked if I could give him our DROP DEAD date for proceeding with the new tank; when do we need to have ODEQ approval, to have a tank built and ready for service in Sept. 2001? He would like to have this info tomorrow, before his meeting with Eric. Remember, that in Rob's letter to ODEQ back in December of last year, outlining the 4 quarter test period for the new wells, that he mentioned August, 2000 as the completion date for collecting the data. Then, he said that "once this determination made, it is expected that ODEQ will then issue a decision regarding the removal of the current moratorium on further tank construction activities at the site". So, August is the earliest date that Eric will have in his mind, for ODEQ to make any kind of a decision.

Told Bob " 10/1/00 "

Jim and Bill, I would like your thought's on this drop dead date tomorrow, for Bob.

Amos

CAM
MAX. 2 mo. to permit 2nd tank (same as 1st)

Act. construction time for 1st tank
8.5 mo.'s - excavation to pitch transfer, for test.
(4/1/99 to 12/15/99)

HAHN AND ASSOCIATES, INC.
ENVIRONMENTAL CONSULTANTS

February 7, 2001

Mr. Eric Blischke
Oregon Department of Environmental Quality
Voluntary Cleanup and Site Assessment Section
2020 SW 4th Avenue
Portland, Oregon 97201

HAI Project No. 2708

SUBJECT: Work Plan for Monitoring Well Installation Activities, Koppers Industries Lease Area, NW Natural-Gasco Facility, 7900 NW St. Helens Road, Portland, Oregon

Dear Mr. Blischke:

1.0 Introduction

At the request of NW Natural and Kopper's Industries, Inc. (KII), and as proposed in correspondence dated November 3, 2000 (Ede to Blischke), Hahn and Associates, Inc. (HAI) has prepared this Work Plan for the installation of groundwater monitoring wells in the vicinity of a proposed coal tar pitch storage tank within the KII Lease Area. Specifically, it is proposed that two wells, one to monitor the upper Alluvial Sand Water Bearing Zone (WBZ), and the other to monitor the base of the Alluvial Sand WBZ, be installed at a location generally down-gradient from a planned future above-ground coal tar storage tank.

This work plan is being provided to you as requested in your correspondence dated December 27, 2000 (Mr. Eric Blischke to Mr. Bob Wyatt), in which the Oregon Department of Environmental Quality (ODEQ) provided permission for KII to commence construction of a second coal tar pitch storage tank at their Portland facility, provided a groundwater monitoring program is associated with the new tank construction.

2.0 Background

As the foundation for the aforementioned tank is to be installed through a zone of residual oil tar contamination [with possible dense non-aqueous phase liquid (DNAPL)], the primary objective of the proposed wells will be to provide adequate coverage for monitoring groundwater quality down-gradient of the tank such that any significant exacerbation / spread of existing contamination that may result from the installation of tank footings (driven pilings to the top of bedrock), may be identified. These proposed wells will be constructed in an identical manner to, and will serve the same function as, existing wells MW-15-50 and MW-15-66, which currently monitor groundwater quality approximately 200 feet to the northwest of the proposed well cluster and down-gradient of a 2-million gallon coal tar tank that was constructed at KII in 1999.

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503/796-0717 OFFICE • 503/227-2209 FAX
www.hahnasoc.com

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3.0 Proposed Monitoring Plan

Once installed, it is proposed that the two new monitoring wells, both of which will have an MW-16 prefix designation, be monitored on a quarterly sampling frequency as per a December 14, 1999 assessment plan[1] that was implemented for the evaluation of environmental impacts associated with piling construction related to the 1999 coal tar pitch tank construction. A groundwater monitoring plan, revised for the inclusion of the proposed MW-16 well cluster, is included herein as Table 1.

The installation of the proposed wells prior to the initiation of tank construction activities, as is planned, will allow for the collection of baseline groundwater quality data that will greatly enhance the interpretation of the magnitude of piling-induced impacts to water quality, if any. To accomplish this, the wells will be monitored for a minimum period of 2 quarters (6 months) prior to the initiation of pile driving activities associated with the proposed tank foundation.

4.0 Proposed MW-16 Well Cluster

Similar to other wells at the site, the final designations for the proposed Alluvial Sand WBZ wells will contain prefix "MW", followed by the monitoring well number, followed by a number representing the depth of the well in feet below ground surface, such as MW-16-65.

The proposed location for these wells is approximately 200 feet southeast of the existing MW-15 well cluster (Figure 1). This location will put the wells approximately 30 to 50 feet east of the proposed coal tar tank, a location that is as close to the tank location as possible due to the presence of a pencil pitch storage facility immediately adjacent to, and down-gradient of, the proposed tank location.

Specifically, it is proposed that one well be installed at the top of the Alluvial Sand WBZ (immediately below the silt unit), while the second well be installed at the base of the alluvial zone (immediately above the bedrock surface). Both wells are to be constructed and double-cased through the silt unit as described below. The shallow well will be constructed with a 10-foot section of screen, while the deep well will be installed with a 5-foot section of screen. Based on available data for the area (MW-15; geotechnical boring G-2 and tank foundation support data), it is estimated that the shallow well will be constructed to a depth of approximately 50 feet below ground surface (bgs), while the deep well will be constructed to a depth of approximately 65 feet bgs. However, the actual depth intervals may be modified in the field based on the hydrogeological conditions encountered.

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[1] Hahn and Associates, Inc. (1999), *Proposed Assessment Plan, Above-Ground Storage Tank Support Pilings, Koppers Lease Area, Northwest Natural Lease Area, Northwest Natural-Gasco Facility, 7900 NW St. Helens Road, Portland, Oregon* (Ede to Blischke), December 14, 1999.

4.1 Installation and Soil Sampling Procedures

All monitoring well installation work will be performed by an Oregon-bonded and licensed monitoring well constructor. The monitoring well installations will be completed in accordance with the Oregon Groundwater Law (Oregon Revised Statute (ORS) Chapter 537) and the Rules for Construction and Maintenance of Monitoring Wells and Other Holes in Oregon (Oregon Administrative Rules (OAR) Chapter 690, Division 240).

Borehole drilling and well installation activities will be conducted via air rotary drilling methodology. Soil quality screening and sampling methodologies will be as specified within the HAI document entitled *Final Remedial Investigation / Feasibility Study Work Plan, Northwest Natural Gas Company*, dated August 4, 1995.

Prior to mobilization of the air rotary drill rig to the site for the commencement of well installation activities, it is proposed that continuous soil core sampling be conducted within a pilot boring at the proposed MW-16 well location with a hollow stem auger drill rig in order to most effectively log soil type and contaminant conditions above the base of the silt unit. Accordingly, it is proposed that continuous soil sampling be conducted from ground surface to the lower portion of the silt unit (estimated at approximately 35 to 40 feet bgs) using a 5-foot long, 3-inch outside diameter (OD), spilt-barrel coring device that will be advanced during drilling inside of the lead auger. Upon completion of sampling activities, the pilot borehole will be grouted from bottom to top with a high solids bentonite grout as the augers are removed from the borehole. Contaminant and hydrogeological conditions, as identified within this pilot borehole, will be used to select the final placement of the large diameter protective steel casing for the MW-16 series wells.

Air rotary drilling associated with the installation of the MW-16 wells will commence no sooner than within 48 hours of the abandonment of the pilot borehole in order to allow sufficient time for the bentonite seal to set. Below the base of the pilot borehole, soil samples will be collected with the use of the air rotary drill rig at approximate 5-foot intervals via split spoon sampling methodology within the boring for the deep Alluvial Sand WBZ well.

No soil sampling will be conducted within the borehole for the upper Alluvial Sand WBZ well location (to be installed second), other than to confirm surface casing and screen placement. All soil samples will be collected for lithologic descriptive purposes only unless field screening results indicate the presence of contamination at locations that do not correlate with the site conceptual model.

4.2 Monitoring Well Design

Wells will be constructed in a similar fashion to the existing MW-15-50 and MW-15-66 wells (construction logs attached). Specifically, it is proposed that the wells be constructed with five feet (deep well) and ten feet (shallow well) of 2-inch ID 0.010-inch slotted stainless-steel screen, a 0.5-foot stainless steel sump installed below the screen, and a Schedule 80 PVC riser pipe above the screen.

A 3-foot thick bentonite plug composed of 3/8-inch bentonite chips will be placed on top of the sand pack for the deep well. Following hydration, a bentonite grout, with a minimum 30-percent solids content, will be placed via a tremie pipe from the top of the bentonite seal to a depth of approximately 2 feet bgs to seal the well casing. At the shallow well location, a bentonite seal consisting of 3/8-inch bentonite chips will be emplaced from the top of the sand pack to within 2 feet of ground surface. The upper two feet of annular space at both well locations will be filled with concrete and the wells will be completed with flush-mounted aluminum well monuments and locking caps.

Because drilling for both wells will be conducted through a zone of residual soil contamination and possible DNAPL occurrence, as well as through the underlying Silt Unit, an 8-inch diameter permanent protective steel surface casing will be installed through the potential DNAPL zone, and will be set approximately 10 feet into the Silt Unit at an estimated depth of approximately 35 feet bgs prior to the continuation of drilling through the Silt Unit (actual depth of the surface casing will be based on lithology and contaminant conditions to be observed within the pilot boring). The surface casing will be permanently cemented in-place by tremie pipe methods. The cement will be allowed to set for a minimum of 12 hours prior to the continuation of drilling.

4.3 Monitoring Well Development

Following installation, each well will be surged with a surge block and further developed by purging with a submersible pump in an attempt to remove the fine sediment from around the well bore. To prevent grout intrusion into the sand pack, development activities will occur no sooner than within 48 hours of the completion of monitoring well installation activities. Development will continue until a minimum of 10 well volumes of water have been removed from the well, relatively sediment-free water is produced, and the indicator parameters of temperature, pH and specific conductance have stabilized to within 10 percent. Sampling will take place no sooner than 72 hours following development.

4.4 Investigative-Derived Waste Management

Soil cuttings, as well as decontamination and development water, will be generated during the proposed monitoring well installation activities. All investigative-derived waste (IDW) will be containerized within water-tight roll-off containers or 55-gallon drums, and left on-site. As provided in correspondence dated May 20, 1996 (Blischke to Hart), all liquid IDW will be treated within NW Natural's existing water treatment system and will be discharged via a National Pollution Prevention Discharge Elimination System (NPDES) permitted discharge point. Soil cuttings will remain on-site pending a determination of an appropriate disposition.

5.0 Anticipated Schedule

As indicated in Section 3.0, it is proposed that wells within the MW-16 cluster be installed a minimum of six months prior to the scheduled start of pile driving activities associated with the planned tank. At this time, due to current market demands, the immediate need for a second tank at the KII facility remains uncertain. Once plans for a second tank are finalized by KII, scheduling for well installation activities will commence such that the wells are in-place and ready for sampling six months prior to the initiation of pile driving.

If there are any comments or questions, please contact either the undersigned.

Sincerely,

Robert B. Ede

Robert Ede, R.G.
Sr. Project Manager

c: Mr. Bob Wyatt, NW Natural
Mr. Amos Kamerer, Koppers Industries, Inc.
Mr. Richard Bach, Stoel Rives LLP

TABLE 1
Proposed Groundwater Monitoring Sampling and Analysis Summary for Monitoring Wells (Revised January 2001)

Remedial Investigation Activities
NW Natural - Gasco Facility
7900 NW St. Helens Road
Portland, Oregon

Project No. 2708

Well Number	Well Location	Water-Bearing Zone	Sampling Events Year 2001				Analytical Methods				
			March	June	September	December	PAHs EPA Method 8270 SIM	BTEX EPA Method 8021	Total Cyanide EPA Method 9010	Amenable Cyanide EPA Method 9010	Total Metals[3] EPA Method 6010
MW-1-22	Riverfront	Surficial Fill	X				X	X	X[1]	X	X
MW-2-32	Riverfront	Surficial Fill	X				X	X	X[1]	X	X
MW-2-61	Riverfront	Alluvial Sand	X		X		X	X	X[1]	X	X
MW-3-26	Riverfront	Surficial Fill	X		X		X	X	X[1]	X	X
MW-3-56	Riverfront	Alluvial Sand	X		X		X	X	X[1]	X	X
MW-4-35	Riverfront	Surficial Fill	X		X		X	X	X[1]	X	X
MW-4-57	Riverfront	Alluvial Sand	X		X		X	X	X[1]	X	X
MW-4-101	Riverfront	Alluvial Sand	X		X		X	X	X[1]	X	X
MW-5-32	Riverfront	Surficial Fill	X		X		X	X	X[1]	X	X
MW-5-100	Riverfront	Alluvial Sand	X		X		X	X	X[1]	X	X
MW-5-175	Riverfront	Alluvial Sand	X		X		X	X	X[1]	X	X
MW-6-32	Down-Gradient of Former Retort Area	Surficial Fill									
MW-8-29	Former Settling Ponds Area	Surficial Fill	X				X	X	X[1]	X	
MW-8-56	Former Settling Ponds Area	Alluvial Sand	X				X	X	X[1]	X	
MW-9-29	Up-Gradient Well	Surficial Fill	X				X	X	X[1]	X	X
MW-10-25	Former Naphthalene Plant / Light Oil Plant	Surficial Fill									
MW-10-61	Former Naphthalene Plant / Light Oil Plant	Alluvial Sand	X				X	X	X[1]	X	X
MW-11-32	Former Settling Ponds / Koppers Land Treatment Area	Surficial Fill									
MW-12-36	Northwest Natural Mixing Station	Surficial Fill	X				X	X	X[1]	X	
MW-13-30	Downgradient of Former Retort Area	Surficial Fill	X		X		X	X	X[1]	X	X
MW-13-61	Downgradient of Former Retort Area	Alluvial Sand	X		X		X	X	X[1]	X	X
MW-14-110	Downgradient of Former Light Oil Plant	Alluvial Sand	X	X	X	X	X	X	X[1]	X	X
MW-15-50	Downgradient of Former Light Oil Plant - New Coal Tar Pitch Tank Pilings	Alluvial Sand	X	X	X	X	X	X	X[1]	X	X
MW-15-66	Downgradient of Former Light Oil Plant - New Coal Tar Pitch Tank Pilings	Alluvial Sand	X	X	X	X	X	X	X[1]	X	X
MW-16-__[2]	Downgradient of Former Light Oil Plant - Proposed Coal Tar Pitch Tank Pilings	Alluvial Sand	X	X	X	X	X	X	X[1]	X	X
MW-16-__[2]	Downgradient of Former Light Oil Plant - Proposed Coal Tar Pitch Tank Pilings	Alluvial Sand	X	X	X	X	X	X	X[1]	X	X
QA/QC	Trip Blank	-	X	X	X	X		X			
QA/QC	Equipment Blank (before sampling deep well)	-	X	X	X	X	X	X			
QA/QC	Equipment Blank (before sampling shallow well)	-	X		X		X	X			
Duplicate	Duplicate	-	X	X	X	X	X	X	X[1]	X	X
QA/QC	Matrix Spike/Matrix Spike Duplicate	-	X				X	X	X[1]	X	X

NOTE: BTEX = benzene, toluene, ethylbenzene, and xylenes
PAHs = polynuclear aromatic hydrocarbons

1 = Analyzed in samples collected during March comprehensive event only.
2 = Wells of the MW-16 cluster are not yet installed (1/01).
3 = Metals = arsenic, chromium, copper, lead, nickel, zinc

Koppers021228

MONITORING WELL CONSTRUCTION LOGS
MW-15-50 AND MW-15-66

HAHN & ASSOCIATES, INC. 434 NW Sixth Avenue Portland, Oregon (503) 796-0717	**MONITORING WELL NUMBER MW-15-50**		
PROJECT: Northwest Natural Gasco Facility Portland, Oregon	HAI LOGGER: Rob Ede SAMPLING METHOD: N/A DRILLING METHOD: Air Rotary EQUIPMENT TYPE: AP-1,000 Drill Systems DRILLER: Gordon Burton	DRILL START Time: 3:20 Date:	DRILL FINISH Time: 17:50 Date:
PROJECT: 2708	DRILLING CONTRACTOR: Geo-Tech Explorations, Inc.	30-Jun-99	1-Jul-99

BORING DIAMETER:	12-inch / 6-inch
CASING DIAMETER:	8-inch steel / 2-inch PVC
SURFACE ELEVATION:	
TOP OF CASING ELEVATION:	

WELL CONSTRUCTION DETAILS	SAMPLE NUMBER*	TIME	HEADSPACE (ppm)	LAB RESULTS TOTAL PAHs (ppm)	SPT (blows/0.5 feet)	RECOVERY (%)	DEPTH (feet)	GROUNDWATER	STRATA (USCS)	SOIL DESCRIPTION
							-3			
							-2			
Flush Monument							-1			Ground surface
Concrete							1			See boring log for boring M-15 for soil description to a depth of 48 feet bgs, and boring MW-15-66 for soil description 50 to 66 feet bgs.
							2		SP	
3/4-inch Bentonite Chips							3			
							4			
							5			
Cement							6			
2-inch ID Blank PVC Casing							7			
							8			
							9			
							10			
							11		SP	
							12			
							13		Tar	
							14			
8-inch Steel Casing							15			
							16		SP	
							17			
							18			
							19			
							20		ML	

HAHN & ASSOCIATES, INC. 434 NW Sixth Avenue Portland, Oregon (503) 796-0717	MONITORING WELL NUMBER MW-15-50			
	HAI LOGGER:	Rob Ede	DRILL START	DRILL FINISH
PROJECT:	SAMPLING METHOD:	N/A		
Northwest Natural	DRILLING METHOD:	Air Rotary	Time:	Time:
Gasco Facility	EQUIPMENT TYPE	AP-1,000 Drill Systems	3:20	17:50
Portland, Oregon	DRILLER:	Gordon Burton	Date:	Date:
PROJECT: 2708	DRILLING CONTRACTOR:	Geo-Tech Explorations, Inc.	30-Jun-99	1-Jul-99

BORING DIAMETER:	12-inch / 6-inch
CASING DIAMETER:	8-inch steel / 2-inch PVC
SURFACE ELEVATION:	
TOP OF CASING ELEVATION:	

WELL CONSTRUCTION DETAILS	SAMPLE NUMBER*	TIME	HEADSPACE (ppm)	LAB RESULTS TOTAL PAHs (ppm)	SPT (blows/0.5 feet)	RECOVERY (%)	DEPTH (feet)	GROUNDWATER	STRATA (USCS)	SOIL DESCRIPTION
3/4-inch Bentonite Chips							21			
							22		ML	
							23			
							24			
							25			
							26			
							27			
Cement							28			
2-inch ID Blank PVC Casing							29			
							30			
8-inch Steel Casing							31			
							32			
							33			
							34		ML	
							35			
							36			
							37			
							38		SP	
10/20 Sand							39			
							40			

HAHN & ASSOCIATES, INC. 434 NW Sixth Avenue Portland, Oregon (503) 796-0717	MONITORING WELL NUMBER MW-15-50			
	HAI LOGGER:	Rob Ede	DRILL START	DRILL FINISH
PROJECT: Northwest Natural Gasco Facility Portland, Oregon	SAMPLING METHOD:	N/A		
	DRILLING METHOD:	Air Rotary	Time:	Time:
	EQUIPMENT TYPE	AP-1,000 Drill Systems	3:20	17:50
	DRILLER:	Gordon Burton	Date:	Date:
PROJECT: 2708	DRILLING CONTRACTOR:	Geo-Tech Explorations, Inc.	30-Jun-99	1-Jul-99

BORING DIAMETER:	12-inch / 6-inch
CASING DIAMETER:	8-inch steel / 2-inch PVC
SURFACE ELEVATION:	
TOP OF CASING ELEVATION:	

WELL CONSTRUCTION DETAILS	SAMPLE NUMBER*	TIME	HEADSPACE (ppm)	LAB RESULTS TOTAL PAHs (ppm)	SPT (blows/0.5 feet)	RECOVERY (%)	DEPTH (feet)	GROUNDWATER	STRATA (USCS)	SOIL DESCRIPTION
10/20 Silica Sand Pack; 2-inch ID 0.010-inch stainless steel slotted pre-packed Screen with 20/40 Sand							41		ML	
							42		SP	
							43		ML	
							44			
							45		SP	
							46			
							47			
							48			
							49			
Sump							50			
							51			Boring terminated at 50 feet bgs on 7/1/99 Monitoring well installed to 50 feet bgs Materials: 10 feet 2-inch ID, 0.010-inch slotted stainless steel screen prepacked with 20/40 silica sand 40 feet 2-inch diameter Schedule 80 PVC blank casing 40 feet 8-inch diameter steel conductor casing 5 50# bag 10/20 sand 16 50# bag of bentonite pellets 15 100# bags cement 1 locking cap 3 centralizers flush well monument
							52			
							53			
							54			
							55			
							56			
							57			
							58			
							59			
							60			

HAHN & ASSOCIATES, INC. 434 NW Sixth Avenue Portland, Oregon (503) 796-0717	MONITORING WELL NUMBER MW-15-66			
PROJECT:	HAI LOGGER:	Rob Ede	DRILL START	DRILL FINISH
Northwest Natural	SAMPLING METHOD:	1.5-inch Split Spoon	Time: 3:20	Time: 10:00
Gasco Facility	DRILLING METHOD:	Air Rotary		
Portland, Oregon	EQUIPMENT TYPE	AP-1,000 Drill Systems	Date: 28-Jun-99	Date: 30-Jun-99
	DRILLER:	Gordon Burton		
PROJECT: 2708	DRILLING CONTRACTOR:	Geo-Tech Explorations, Inc.		

BORING DIAMETER:	12-inch / 6-inch
CASING DIAMETER:	8-inch steel / 2-inch PVC
SURFACE ELEVATION:	
TOP OF CASING ELEVATION:	

WELL CONSTRUCTION DETAILS	SAMPLE NUMBER*	TIME	HEADSPACE (ppm)	LAB RESULTS TOTAL PAHs (ppm)	SPT (blows/0.5 feet)	RECOVERY (%)	DEPTH (feet)	GROUNDWATER	STRATA (USCS)	SOIL DESCRIPTION
							-3			
							-2			
Flush Monument							-1			Ground surface
Concrete							1			See boring log for boring M-15 for soil description to a depth of 48 feet bgs.
							2		SP	
3/8-inch Bentonite Chips							3			
							4			
							5			
Cement							6			
							7			
2-inch ID Blank PVC Casing							8			
							9			
							10			
							11		SP	
							12			
							13		Tar	
							14			
							15			
8-inch Steel Casing							16		SP	
							17			
Bentonite Grout							18			
							19			
							20		ML	

Updated: 1/19/01 RBE
File: 2708 MW-15-66

HAHN & ASSOCIATES, INC.
434 NW Sixth Avenue
Portland, Oregon
(503) 796-0717

MONITORING WELL NUMBER MW-15-66

HAI LOGGER:	Rob Ede	DRILL START	DRILL FINISH
SAMPLING METHOD:	1.5-inch Split Spoon		
DRILLING METHOD:	Air Rotary	Time: 3:20	Time: 10:00
EQUIPMENT TYPE	AP-1,000 Drill Systems		
DRILLER:	Gordon Burton	Date: 28-Jun-99	Date: 30-Jun-99
DRILLING CONTRACTOR:	Geo-Tech Explorations, Inc.		

PROJECT:
Northwest Natural
Gasco Facility
Portland, Oregon
PROJECT: 2708

BORING DIAMETER:	12-inch / 6-inch
CASING DIAMETER:	8-inch steel / 2-inch PVC
SURFACE ELEVATION:	
TOP OF CASING ELEVATION:	

WELL CONSTRUCTION DETAILS	SAMPLE NUMBER*	TIME	HEADSPACE (ppm)	LAB RESULTS TOTAL PAHs (ppm)	SPT (blows/0.5 feet)	RECOVERY (%)	DEPTH (feet)	GROUNDWATER	STRATA (USCS)	SOIL DESCRIPTION
							21			
							22		ML	
							23			
							24			
							25			
							26			
							27			
Cement; 2-inch ID Blank PVC Casing							28			
Bentonite Grout							29			
							30			
							31			
							32			
							33			
8-inch Steel Casing							34		ML	
							35			
							36			
							37			
							38		SP	
							39			
							40			

HAHN & ASSOCIATES, INC. 434 NW Sixth Avenue Portland, Oregon (503) 796-0717	MONITORING WELL NUMBER MW-15-66			
PROJECT: Northwest Natural Gasco Facility Portland, Oregon	HAI LOGGER:	Rob Ede	DRILL START	DRILL FINISH
	SAMPLING METHOD:	1.5-inch Split Spoon		
	DRILLING METHOD:	Air Rotary	Time:	Time:
	EQUIPMENT TYPE	AP-1,000 Drill Systems	3:20	10:00
	DRILLER:	Gordon Burton	Date:	Date:
PROJECT: 2708	DRILLING CONTRACTOR:	Geo-Tech Explorations, Inc.	28-Jun-99	30-Jun-99

BORING DIAMETER:	12-inch / 6-inch
CASING DIAMETER:	8-inch steel / 2-inch PVC
SURFACE ELEVATION:	
TOP OF CASING ELEVATION:	

Well construction details: Bentonite Grout; 2-inch ID Blank PVC Casing; Bentonite Chip Seal; 10/20 Sand Pack

SAMPLE NUMBER*	TIME	HEADSPACE (ppm)	LAB RESULTS TOTAL PAHs (ppm)	SPT (blows/0.5 feet)	RECOVERY (%)	DEPTH (feet)	GROUNDWATER	STRATA (USCS)	SOIL DESCRIPTION
						41		ML	
						42		SP	
						43		ML	
						44			
						45			
						46			
						47			
						48			
						49		SP	
						50			
				2	100				SAND - brown, wet, very fine grained, loose, some thin orange-brown mottled silt layers, no odor, no sheen.
				4	100	51			
-12	12:15	0.1	ND	2	100				
						52			
						53			
						54			
						55			
				2	100				Silty SAND - brown, wet, very fine grained, loose, some thin brown mottled silt layers, no odor, no sheen.
				3	100	56			
-13	13:15	0.1	-	4	100				
						57		SM	
						58			
						59			
						60			

HAHN & ASSOCIATES, INC. 434 NW Sixth Avenue Portland, Oregon (503) 796-0717	MONITORING WELL NUMBER MW-15-66			
PROJECT:	HAI LOGGER:	Rob Ede	DRILL START	DRILL FINISH
Northwest Natural	SAMPLING METHOD:	1.5-inch Split Spoon	Time:	Time:
Gasco Facility	DRILLING METHOD:	Air Rotary	3:20	10:00
Portland, Oregon	EQUIPMENT TYPE	AP-1,000 Drill Systems	Date:	Date:
PROJECT: 2708	DRILLER:	Gordon Burton	28-Jun-99	30-Jun-99
	DRILLING CONTRACTOR:	Geo-Tech Explorations, Inc.		

BORING DIAMETER:	12-inch / 6-inch
CASING DIAMETER:	8-inch steel / 2-inch PVC
SURFACE ELEVATION:	
TOP OF CASING ELEVATION:	

WELL CONSTRUCTION DETAILS	SAMPLE NUMBER*	TIME	HEADSPACE (ppm)	LAB RESULTS TOTAL PAHs (ppm)	SPT (blows/0.5 feet)	RECOVERY (%)	DEPTH (feet)	GROUNDWATER	STRATA (USCS)	SOIL DESCRIPTION
10/20 Silica Sand Pack; 2-inch ID 0.010-inch slot stainless steel screen					15	100			ML	SILT - brown, moist, non-plastic, some very fine grained muscovite, a few thin beds of very fine grained sand, no odor, no sheen.
					20	100	61			
	-14	14:20	0	-	25	100				
					20	100	62			
					22	100				SAND with interbedded Silts - brown, wet Sand, moist Silt, no odor, no sheen.
	-15	14:30	0	-	15	100	63		SP	
					-	100			SM	Silty SAND - brown, wet, very fine grained, loose, no odor, no sheen.
					-	100	64			
	-16	14:50	0	ND	-	100			SP	SAND - brown, wet, fine grained no odor, no sheen.
							65		Bedrock	Bedrock - vesicular basalt fragments in end of sampler at depth of sampler refusal at depth of 64.5 feet bgs.
							66			
							67			
							68			
							69			
							70			
							71			
							72			
							73			
							74			
							75			
							76			
							77			
							78			
							79			
							80			

Boring terminated at 66 feet bgs on 6/29/99
Monitoring well installed to 66 feet bgs

Materials:
5 feet 2-inch ID, 0.010-inch slot stainless steel screen
65 feet 2-inch diameter Schedule 40 PVC blank casing
40 feet 8-inch diameter steel conductor casing
5 50# bag 10/20 sand
13 50# bag of bentonite pellets
10 50# bags bentonite grout
15 100# bags cement
1 6-inch PVC sump
1 locking cap
flush well monument

* Sample Prefix Number is 2708-990629 -

RECEIVED

FEB 08 2001

KOPPERS INDS, INC.
PORTLAND OR

PURCHASE INVOICE

Purchase Invoice Number: 3484458

Purchase Invoice Date: 04/24/07

Page: 1

Pay
To: PERKINS COIE
1201 THIRD AVE
40TH FLOOR
SEATTLE, WA 98101-3099

Ship
To: PORTLAND TERMINAL
7540 NW Saint Helens Road
Portland, OR 97210

Ship Via	
Receive By	06/18/07
Terms	Net 15 Days
Vendor ID	390491008

Confirm To	
Buyer	
P.O. Number	
P.O. Date	06/18/07

Item No.	Description	Unit	Quantity	Unit Price	Total Price
	ENVIRONMENTAL EXPENSE		1	1,731.30	1,731.30

Subtotal:	1,731.30
Invoice Discount:	0.00
Total Sales Tax:	0.00
Total:	1,731.30

Perkins Coie

ANCHORAGE • BEIJING • BELLEVUE • BOISE • CHICAGO • DENVER • LOS ANGELES • MENLO PARK • OLYMPIA • PHOENIX • PORTLAND • SAN FRANCISCO • SEATTLE • SHANGHAI • WASHINGTON, D.C.
CENTRALIZED ACCOUNTING DEPARTMENT
1201 THIRD AVENUE, 40TH FLOOR
SEATTLE, WASHINGTON 98101-3099
MAIN TELEPHONE NUMBER: (206) 359-8000
ACCOUNTING: (206) 359-3143 - CLIENTACCT@PERKINSCOIE.COM
TAX I.D. NUMBER: 91-0591206

ACCOUNT NUMBER: [redacted]

April 24, 2007

Invoice 3484458

Koppers Inc.
Attn: Ms. Traci Self, Environmental Manager
436 7th Avenue
Pittsburgh, PA 15219

INVOICE

FOR SERVICES THROUGH 03/31/07, IN CONNECTION WITH THE FOLLOWING:

Total Services	$1,725.00
Disbursements and Other Charges	$6.30
TOTAL DUE THIS INVOICE	**$1,731.30**

Portland Terminal

Date	Attorney/Assistant	Hours	Description of Services
03/05/07	C. Rich	0.40	Review and respond to correspondence from B. Meisenger and T. Self;
03/06/07	C. Rich	0.30	Research consultants for Koppers stormwater project;
03/12/07	C. Rich	0.80	Telephone conference with E. Zais at DEQ regarding status of stormwater review and schedule; draft email update to client; review potential consultants;
03/14/07	C. Rich	1.70	Interview potential consultants regarding stormwater at Portland terminal; review and revise RFP for stormwater project, compare consultant bids; obtain background information on Koppers for potential consultant;
03/15/07	C. Rich	0.60	Review and respond to consultant questions regarding Koppers stormwater analysis;
03/22/07	C. Rich	0.40	Conference with Shaw Environmental; review comments by B. Weisinger regarding proposals;
03/27/07	C. Rich	0.40	Telephone status conference with E. Zais at DEQ;
03/28/07	C. Rich	0.40	Telephone conference with E. Zais regarding status of consultant; draft email to Koppers requesting approval of consulting firm;

Total For Services $1,725.00

Disbursements and Other Charges

Photocopying and printing expenses 6.30

bursement and Other Charges Total $6.30

PPI9270000-399

PI-25585

Total This Invoice **$1,731.30**

CURRENT CHARGES ONLY. UNPAID BALANCES NOT INCLUDED.
DISBURSEMENTS NOT YET RECORDED WILL BE INCLUDED IN FUTURE INVOICES.
PAYMENT DUE IN U.S. DOLLARS UPON RECEIPT OF INVOICE.
AFTER 30 DAYS, A MONTHLY LATE CHARGE OF 1% PER MONTH FROM THE INVOICE DATE (OR SUCH LOWER RATE AS REQUIRED BY APPLICABLE LAW) WILL BE DUE.
SHOULD A COLLECTION ACTION OR PROCEEDING BE NECESSARY, ATTORNEYS' FEES AND COSTS FOR SUCH COLLECTION EFFORT WILL ALSO BE DUE.
PERKINS COIE LLP AND AFFILIATES

CWR

This invoice is for current charges only.
Outstanding invoices from prior billing cycles will be summarized on a separate Statement of Account.
Late Charges Will Be Due If This Invoice Is Not Paid On Or Before MAY 24, 2007

If payment is made by wire remittance, please direct to:

Perkins Coie
US Bank
Bank ABA # 125000105
Account # 1 535 5592 1235
Please reference your Perkins Coie Account No. 60573, Invoice 3484458

INFORMATION MAY BE SUBJECT TO ATTORNEY-CLIENT AND/OR ATTORNEY WORK PRODUCT PRIVILEGES

PURCHASE INVOICE

Purchase Invoice Number: 284899-R8-005

Purchase Invoice Date: 11/13/07

Page: 1

Pay
To: SHAW ENVIRONMENTAL INC
39001 TREASURY CENTER
CHICAGO, IL 60694-9000

Ship
To: PORTLAND TERMINAL
7540 NW Saint Helens Road
Portland, OR 97210

Ship Via		Confirm To	
Receive By	12/11/07	Buyer	
Terms	Net 46 Days	P.O. Number	
Vendor ID	386974028	P.O. Date	12/11/07

Item No.	Description	Unit	Quantity	Unit Price	Total Price
	CONTRACTED EXPENSE		1	4,315.76	4,315.76

Subtotal:	4,315.76
Invoice Discount:	0.00
Total Sales Tax:	0.00
Total:	4,315.76

Invoice Number:
284899-R8-00501

Shaw® Shaw Envir: :mental, Inc.

INVOICE

Name: Koppers, Inc.

Client Number: 1121670

Cost Cd	Cost Cd Description	Date	Units	Rate	Amount
	TOTAL FOR: Site Inspection				776.94
3					
300					
30000					
3000000	Analysis/Reporting				
	ST labor				
	Lamadrid, David	UHOZ			
	Project Manager	07/18/07	.50	92.00	46.00
	TOTAL FOR: Analysis/Reporting				46.00

Sub Total:	4,315.76
Total Taxable Amount:	.00
Total Tax:	.00
Total F » ***** This Invoice *****	4,315.76

PPI9270000- 530
34233

www.shawgrp.com
Form: FS0002 B08

Koppers021242

Remit To: Shaw Environmental, Inc.
39001 Treasury Center
Chicago, IL 60694-9000

Shaw® Shaw Environmental, Inc.

INVOICE

Project Name: Koppers Inc - Stormwater
Project Num: 127223

Koppers, Inc.
Attn: William Meisinger
436 William Pitt Way

Pittsburgh, PA 15238-1362

Invoice Number:	284899-R8-00501
Invoice Date:	11/13/07
Billing Through:	10/26/07
Payment Terms:	Net 30 Days
Client Number:	1121670
Client Order Number:	
Project Mgr:	David Lamadrid
Shaw Contract No:	127223

Account Notes

Stormwater System Evaluation
Groundwater Infiltration at the Koppers, Inc. Facility

Cost Cd	Cost Cd Description	Date	Units	Rate	Amount
01					
0100					
010000					
01000000	Data Review				
	ST labor				
	Portacio, Maria-Lourdes D	PHOZ			
	Drafter	07/02/07	.50	56.00	28.00
	Muhammad, Carol D	OAOZ			
	Administrative	07/06/07	.50	50.00	25.00
	Lamadrid, David	UHOZ			
	Project Manager	04/24/07	3.00	92.00	276.00
	Project Manager	05/01/07	3.00	92.00	276.00
	Project Manager	05/03/07	1.50	92.00	138.00
	Project Manager	05/08/07	5.00	92.00	460.00
	Project Manager	05/08/07	5.00	92.00	460.00
	Project Manager	05/09/07	2.00	92.00	184.00
	Project Manager	06/04/07	6.50	92.00	598.00
	Project Manager	06/20/07	4.00	92.00	368.00
	Project Manager	06/22/07	3.00	92.00	276.00
	Repro/Prt-Outside				
	Dept of Environmental Quality				
	P07-0250	06/07/07	.00	.00	403.82
		TOTAL FOR: Data Review			3,492.82
02					
0200					
020000					
02000000	Site Inspection				
	ST labor				
	Davendonis, Jason T.	SHOZ			
	Scientist 2	06/12/07	3.00	60.00	180.00
	Scientist 2	06/14/07	.50	60.00	30.00
	Lamadrid, David	UHOZ			
	Project Manager	06/12/07	6.00	92.00	552.00
	Materials				
	Jones, Jeremy M.				
	TEA001940955C	07/05/07	.00	.00	14.94

Inquiries:
Shaw Environmental, Inc
...0 SW Nimbus Avenue, Suite
Building P
Portland, OR 97223-4345
(503) 603-1000

TOTAL ON LAST PAGE

Form: FS0002 B08
Shaw No: 12979238

Koppers021243

Post-it® Fax Note 7671 | Date 12/6/07 | # of pages ▸ 5
To T.J. TURNER | From BILL MEISINGER
Co./Dept. | Co.
Phone # | Phone #
Fax # | Fax #

Shaw Environmental, Inc.
10300 SW Nimbus Avenue, Suite B
Portland, OR 97223-4345
503-603-1000
FAX: 503-603-1001

Shaw® Shaw Environme ital, Inc.

November 14, 2007
Project 127223

Mr. William Meisinger
Manager, Engineering
Koppers, Inc.
1005 William Pitt Way
Pittsburg, PA 15238-1362

Re: Invoice No. 250034-R8-005 0 , Stormwater System Evaluation, Koppers, Inc. Facility, Portland, Oregon

Dear Mr. Meisinger:

Enclosed is Shaw Environmenta l, Inc.'s (Shaw) invoice for professional services for the accounting period through Octobe 6, 2007. Koppers, Inc. was not invoiced over the last three months while waiting for review and approval by Koppers, Inc. of Shaw's draft and final proposals for catch basin evaluation and cleaning (final proposal dated September 4, 2007). The proposal included $3,500 for additional funds for out-of-scope services for Task 01000000, and $4,050 for a new task (task 0400000 0 for catch basin cleaning). The proposal was authorized by Perkins Coie LLP/Koppers, Inc. o October 22, 2007. The majority of the billings on the enclosed invoice are from June and uly 2007 related to the out-of-scope services.

A budget summary of charges throu gh October 26, 2007, is provided in Table 1. Project activity during this period is described belo w by task number.

01000000 – Data Review

- Finalize compilation and review of background information and data.

02000000 -- Site Inspection

- Finalize evaluation of information obtained during inspection of the stormwater system.

03000000 – Analysis and Reporting

- Evaluation of background information and data.

04000000 – Catch Basin Cleaning

- No activity.

Shaw appreciates the opportunity to work with you on this project. If you have any questions regarding the work described above, please call me at (503) 603-1067 or e-mail me at david.lamadrid@shawgrp.com.

Sincerely,

SHAW ENVIRONMENTAL, INC.

David Lamadrid, R.G.
Project Geologist

Enclosure: Invoice No. 250034-8-00501
Budget Summary through June 29, 2007

cc: Christopher Rich, Perkins Coie, LLP (copy)

Budget Summary Through October 26, 2007
Stormwater System Evaluation
Koppers, Inc. Facility
Portland, Oregon

Shaw Project No: 127223 **Project Manager: D. Lamadrid**

Koppers, Inc. - Stormwater System Evaluation

Task	Task Description	Total Approved Budget[a]	*Current Billed 250034-R8-00501 6/1/07 - 6/29/07*	Total Billed	Budget Remaining	Percent Budget Expended	Percent Task Complete (approximate)
0100 2007	Date Review	$7,920	*$3,492.82*	$7,910.82	$9.18	100%	100%
0200 2007	Site Inspection	$3,220	*$776.94*	$3,292.44	($72.44)	102%	100%
0300 2007	Analysis and Reporting	$4,360	*$46.00*	$4,396.00	($36.00)	101%	100%
0400 2007	Catch Basin Cleaning	$4,050	*$0.00*	$0.00	$4,050.00	0%	0%
		$19,550	***$4,315.76***	**$15,599.26**	**$3,950.74**	**80%**	

[a] Based on budget presented in Shaw's proposal dated March 21, 2007, approved by Koppers, Inc., and supplemental propsal dated September 4, 2007.

Koppers021246

PURCHASE INVOICE

Purchase Invoice Number: 5712074

Purchase Invoice Date: 12/17/07

Page: 1

Pay
To: COLUMBIA INSPECTION INC
COLUMBIA INSPECTIO
ST JOHNS STATION
PO BOX 83569
PORTLAND, OR 97283-0569

Ship
To: PORTLAND TERMINAL
7540 NW Saint Helens Road
Portland, OR 97210

Ship Via		Confirm To	
Receive By	12/27/07	Buyer	
Terms	Net 30 Days from Ship Date	P.O. Number	
Vendor ID	014327008	P.O. Date	12/27/07

Item No.	Description	Unit	Quantity	Unit Price	Total Price
	ENVIRONMENTAL EXPENSE		1	837.38	837.38

Subtotal:	837.38
Invoice Discount:	0.00
Total Sales Tax:	0.00
Total:	837.38

COLUMBIA INSPECTION, INC.

U.S Customs & Border Protection Approved Gaugers
Petroleum and Environmental Laboratory
Tank Calibrations

INVOICE

Invoice Number: 5712074 **Invoice Date:** 12/17/07

071
TO: T.J. Turner
Koppers Industries, Inc.
7540 NW St. Helens Road
Portland, OR 97210-3663

Received
12/03/07

Client
Koppers Industries, Inc.

Project
Monthly NPDES

Work Order(s)
7120310

Comments

PPI9270000- 547
35033

Project Number
[none]

PO Number
NA

QUANTITY	ANALYSIS/DESCRIPTION	MATRIX	UNIT COST	EXTENDED COST
1	ARSENIC - ICP [2 day]	Water	$26.25	$26.25
1	BTEX 624 [2 day]	Water	$131.25	$131.25
1	CADMIUM - ICP [2 day]	Water	$26.25	$26.25
1	COPPER - ICP [2 day]	Water	$26.25	$26.25
1	CYANIDE, WEAK ACID [2 day]	Water	$57.75	$57.75
1	DIGESTION - 3015 [2 day]	Water	$26.25	$26.25
1	LEAD - ICP [2 day]	Water	$26.25	$26.25
1	MERCURY CV AF [2 day]	Water	$52.50	$52.50
1	O & G, NP (SGT-HEM) [2 day]	Water	$18.00	$18.00
1	O & G, TOTAL (HEM) [2 day]	Water	$45.00	$45.00
1	PHENOLS, TOTAL [2 day]	Water	$57.75	$57.75
1	PNAH 625 [2 day]	Water	$204.75	$204.75
1	SAMPLE PICKUP FEE [2 day]	Water	$7.88	$7.88
1	SELENIUM - ICP [2 day]	Water	$26.25	$26.25
1	SILVER - ICP [2 day]	Water	$26.25	$26.25
1	TIN - ICP [2 day]	Water	$26.25	$26.25
1	TURBIDITY [2 day]	Water	$26.25	$26.25
1	ZINC - ICP [2 day]	Water	$26.25	$26.25

Invoice Total: **$837.38**

COLUMBIA INSPECTION, INC 7133 N. Lombard, Portland, OR 97203 Phone:(503) 286-9464 Fax:(503) 286-5355 E-mail:lab@ColumbiaInspection.

All work performed is subject to the terms and conditions of our current schedule of rates. Liability is limited to the amount of this invoice

Terms - Net 15 Days

Thank you for doing business with Columbia Inspection

Please state invoice number and remit to:

Columbia Inspection, Inc.
PO Box 83569, St. Johns Station
Portland, OR 97283

CI

COLUMBIA INSPECTION, INC.

U.S Customs & Border Protection Approved Gaugers
Petroleum and Environmental Laboratory
Tank Calibrations

Invoice Number: 5712074

Client
Koppers Industries, Inc.

Work Order(s)
7120310

Project Number
[none]

PO Number
NA

071

TO: T.J. Turner
Koppers Industries, Inc.
7540 NW St. Helens Road
Portland, OR 97210-3663

PURCHASE INVOICE

Purchase Invoice Number: 5709024

Purchase Invoice Date: 09/07/07

Pay
To: COLUMBIA INSPECTION INC
COLUMBIA INSPECTIO
ST JOHNS STATION
PO BOX 83569
PORTLAND, OR 97283-0569

Ship
To: PORTLAND TERMINAL
7540 NW Saint Helens Road
Portland, OR 97210

Ship Via	
Receive By	12/14/07
Terms	Net 30 Days from Ship Date
Vendor ID	014327008

Confirm To	
Buyer	
P.O. Number	
P.O. Date	12/14/07

Item No.	Description	Unit	Quantity	Unit Price	Total Price
	ENVIRONMENTAL EXPENSE		1	916.10	916.10

Subtotal:	916.10
Invoice Discount:	0.00
Total Sales Tax:	0.00
Total:	916.10

COLUMBIA INSPECTION, INC.

U.S Customs & Border Protection Approved Gaugers
Petroleum and Environmental Laboratory
Tank Calibrations

INVOICE

Invoice Number: 5709024 **Invoice Date:** 09/07/07

071
TO: T.J. Turner
Koppers Industries, Inc.
7540 NW St. Helens Road
Portland, OR 97210-3663

Received
08/22/07

Client
Koppers Industries, Inc.

Project
POTW Discharge

Work Order(s)
7082210

Comments

Project Number
[none]

PO Number
NA

QUANTITY	ANALYSIS/DESCRIPTION	MATRIX	UNIT COST	EXTENDED COST

Work performed is subject to the terms and conditions of our current schedule of rates. Liability is limited to the amount of this

Terms - Net 15 Days

Thank you for doing business with Columbia Inspection

Please state invoice number and remit to:
Columbia Inspection, Inc.
PO Box 83569, St. Johns Station
Portland, OR 97283

Invoice Number: 5709024 **Invoice Date:** 09/07/07

071
TO: T.J. Turner
Koppers Industries, Inc.
7540 NW St Helens Road
Portland, OR 97210-3663

Received
08/22/07

Client
Koppers Industries, Inc.

Project
POTW Discharge

Work Order(s)
7082210

Comments

Project Number
[none]

PO Number
NA

QUANTITY	ANALYSIS/DESCRIPTION	MATRIX	UNIT COST	EXTENDED COST
	ARSENIC - ICP [5 day]	Water	$17.50	$17.50
	B/N/A SEMIVOL 625 [5 day]	Water	$262.50	$262.50
	BOD [5 day]	Water	$35.00	$35.00
	CADMIUM - ICP [5 day]	Water	$17.50	$17.50
	CHROMIUM - ICP [5 day]	Water	$17.50	$17.50
	COPPER - ICP [5 day]	Water	$17.50	$17.50
	CYANIDE, TOTAL [5 day	Water	$38.50	$38.50
	DIGESTION - 3015 [5 day	Water	$17.50	$17.50
	FLASH POINT - PM A,F [day]	Water	$87.50	$87.50
	LEAD - ICP [5 day]	Water	$17.50	$17.50
	MERCURY CV AF [5 day]	Water	$35.00	$35.00
	MOLYBDENUM - ICP [5 day]	Water	$17.50	$17.50
	NICKEL - ICP [5 day]	Water	$17.50	$17.50
	O & G, NP (SGT-HEM) [5 day]	Water	$12.00	$12.00
	O & G, TOTAL (HEM) [5 day]	Water	$30.00	$30.00
	PESTICIDES 625 [5 day]	Water	$0.00	$0.00
	PH [5 day]	Water	$12.60	$12.60
	SAMPLE PICKUP FEE [5 day]	Water	$7.50	$7.50
	SELENIUM - ICP [5 day]	Water	$17.50	$17.50
	SILVER - ICP [5 day]	Water	$17.50	$17.50
	SULFIDE [5 day]	Water	$24.50	$24.50
	SUSPENDED SOLIDS [5 day	Water	$21.00	$21.00
	VOC 624 Extended [5 day]	Water	$157.50	$157.50

COLUMBIA INSPECTION, INC 7133 N. Lombard, Portland, OR 97203 Phone:(503) 286-9464 Fax:(503) 286-5355 E-mail:lab@ColumbiaInspection.

Work performed is subject to terms and conditions of our schedule of rates. Liability limited to the amount of this

Terms - Net 15 Days

Thank you for doing business with Columbia Inspection

Please state invoice number and remit to:
Columbia Inspection, Inc.
PO Box 83569, St. Johns Station
Portland, OR 97283

Invoice Number: 5709024 **Invoice Date:** 09/07/07

071
TO: T.J. Turner
Koppers Industries, Inc.
7540 NW St Helens Road
Portland, OR 97210-3663

Received
08/22/07

Client
Koppers Industries, Inc.
Project
POTW Discharge
Work Order(s)
7082210
Project Number
[none]
PO Number
NA

Comments

QUANTITY	ANALYSIS/DESCRIPTION	MATRIX	UNIT COST	EXTENDED COST
	ZINC - ICP [5 day]	Water	$17.50	$17.50

Invoice Total: **$916.10**

COLUMBIA INSPECTION INC 7133 N. Lombard, Portland, OR 97203 Phone:(503) 286-9464 Fax:(503) 286-5355 E-mail:lab@ColumbiaInspection.

All work performed is subject to the terms and conditions of our current schedule of rates. Liability limited to the amount of this

Terms - Net 15 Days

Thank you for doing business with Columbia Inspection

Please state invoice number and remit to:
Columbia Inspection, Inc.
PO Box 83569, St. Johns Station
Portland, OR 97283

COLUMBIA INSPECTION, INC.

U.S Customs & Border Protection Approved Gaugers
Petroleum and Environmental Laboratory
Tank Calibrations

Invoice Number: 5709024

Client
Koppers Industries, Inc.

Work Order(s)
7082210

Project Number
{none}

PO Number
NA

071

TO: T.J. Turner
Koppers Industries, Inc.
7540 NW St. Helens Road
Portland, OR 97210-3663

Columbia Inspection, Inc.

P.O. Box 83569
7133 N. Lombard
Portland, OR 97283

Dec 31, 2007

Statement

Customer No: 071

Any Questions or Concerns
Please contact Kit at:

Phone: (503) 286-9464
Claccounting@columbiainspection.com

TO: Koppers Industries, Inc.
7540 NW St. Helens Road
Portland, OR 97210-3663

Amount Enclosed
$ ____________

Thank You !

Date	Item No.	Due Date	Order No/P.O. No.	Amount
9/7/07	5709024	9/22/07		916.10
11/28/07	5711133	12/13/07		842.63

PPI9270000- 543
34506

Total 1,758.73

CURRENT	0 To 30 Days	30 to 60 Days	*VERY OLD !*
0.00	842.63	0.00	916.10

Thank You For Doing Business With CI !!

Columbia Inspection, Inc.

P.O. Box 83569
7133 N. Lombard
Portland, OR 97283

Mar 16, 2007

Statement

Customer No: 071

Any Questions or Concerns
Please call Kit at:
Phone: (503) 286-9464
or
Fax: (503) 285-7831

TO: Koppers Industries, Inc.
7540 NW St. Helens Road
Portland, OR 97210-3663

Amount Enclosed
$ ____________

Thank You !

Date	Item No.	Due Date	Order No/P.O. No.	Amount
2/13/07	5702080	2/28/07		203.00
2/28/07	5702203	3/15/07		109.50

Paid 4/13/07
3/15/07

Total 312.50

CURRENT	0 To 30 Days	30 to 60 Days	*VERY OLD !*
109.50	203.00	0.00	0.00

Thank You For Doing Business With CI !!

PURCHASE INVOICE

Purchase Invoice Number: 5711133

Purchase Invoice Date: 11/28/07

Page: 1

Pay
To: COLUMBIA INSPECTION INC
COLUMBIA INSPECTIO
ST JOHNS STATION
PO BOX 83569
PORTLAND, OR 97283-0569

Ship
To: PORTLAND TERMINAL
7540 NW Saint Helens Road
Portland, OR 97210

Ship Via	
Receive By	12/04/07
Terms	Net 30 Days from Ship Date
Vendor ID	014327008

Confirm To	
Buyer	
P.O. Number	
P.O. Date	12/04/07

Item No.	Description	Unit	Quantity	Unit Price	Total Price
	ENVIRONMENTAL EXPENSE		1	842.63	842.63

Subtotal:	842.63
Invoice Discount:	0.00
Total Sales Tax:	0.00
Total:	842.63

COLUMBIA INSPECTION, INC.

U.S Customs & Border Protection Approved Gaugers
Petroleum and Environmental Laboratory
Tank Calibrations

INVOICE

Invoice Number: 5711133 **Invoice Date:** 11/28/07

071
TO: Amos Kamerer
Koppers Industries, Inc.
7540 NW St. Helens Road
Portland, OR 97210-3663

Received
11/19/07

Client
Koppers Industries, Inc.

Project
Monthly NPDES

Work Order(s)
7111901

Project Number
[none]

PO Number
NA

Comments

PPI9270000- 527
PI-33945

QUANTITY	ANALYSIS/DESCRIPTION	MATRIX	UNIT COST	EXTENDED COST
1	ARSENIC - ICP [2 day]	Water	$26.25	$26.25
1	BTEX 8260 [2 day]	Water	$131.25	$131.25
1	CADMIUM - ICP [2 day]	Water	$26.25	$26.25
1	COPPER - ICP [2 day]	Water	$26.25	$26.25
1	CYANIDE, WEAK ACID [2 day]	Water	$57.75	$57.75
1	DIGESTION - 3015 [2 day]	Water	$26.25	$26.25
1	LEAD - ICP [2 day]	Water	$26.25	$26.25
1	MERCURY CV AF [2 day]	Water	$52.50	$52.50
1	O & G, NP (SGT-HEM) [2 day]	Water	$18.00	$18.00
1	O & G, TOTAL (HEM) [2 day]	Water	$45.00	$45.00
1	PHENOLS, TOTAL [2 day]	Water	$57.75	$57.75
1	PNAH 8270 [2 day]	Water	$210.00	$210.00
1	SAMPLE PICKUP FEE [2 day]	Water	$7.88	$7.88
1	SELENIUM - ICP [2 day]	Water	$26.25	$26.25
1	SILVER - ICP [2 day]	Water	$26.25	$26.25
1	TIN - ICP [2 day]	Water	$26.25	$26.25
1	TURBIDITY [2 day]	Water	$26.25	$26.25
1	ZINC - ICP [2 day]	Water	$26.25	$26.25

All work performed is subject to the terms and conditions of our current schedule of rates. Liability is limited to the amount of this invoice

Terms - Net 15 Days

Thank you for doing business with Columbia Inspection

Please state invoice number and remit to:
Columbia Inspection, Inc.
PO Box 83569, St. Johns Station
Portland, OR 97283

Invoice Total: **$842.63**

COLUMBIA INSPECTION, INC 7133 N. Lombard, Portland, OR 97203 Phone:(503) 286-9464 Fax:(503) 286-5355 E-mail:lab@ColumbiaInspection.

All work performed is subject to the terms and conditions of our current schedule of rates. Liability is limited to the amount of this invoice

Terms - Net 15 Days

Thank you for doing business with Columbia Inspection

Please state invoice number and remit to:

Columbia Inspection, Inc.
PO Box 83569, St. Johns Station
Portland, OR 97283

PURCHASE INVOICE

Purchase Invoice Number: 5710154

Purchase Invoice Date: 10/22/07

Page: 1

Pay
To: COLUMBIA INSPECTION INC
COLUMBIA INSPECTIO
ST JOHNS STATION
PO BOX 83569
PORTLAND, OR 97283-0569

Ship
To: PORTLAND TERMINAL
7540 NW Saint Helens Road
Portland, OR 97210

Ship Via	
Receive By	10/31/07
Terms	Net 30 Days from Ship Date
Vendor ID	014327008

Confirm To	
Buyer	
P.O. Number	
P.O. Date	10/31/07

Item No.	Description	Unit	Quantity	Unit Price	Total Price
	ENVIRONMENTAL EXPENSE		1	175.50	175.50

Subtotal:	175.50
Invoice Discount:	0.00
Total Sales Tax:	0.00
Total:	175.50

COLUMBIA INSPECTION, INC.

U.S Customs & Border Protection Approved Gaugers
Petroleum and Environmental Laboratory
Tank Calibrations

INVOICE

Invoice Number: 5710154 **Invoice Date:** 10/29/07

071
TO: T.J. Turner
Koppers Industries, Inc.
7540 NW St. Helens Road
Portland, OR 97210-3663

Received
10/22/07

Client
Koppers Industries, Inc.

Project
Stormwater Tanks

Work Order(s)
7102201

Comments
Analysis for Zero day TAT

Project Number
[none]

PO Number
NA

QUANTITY	ANALYSIS/DESCRIPTION	MATRIX	UNIT COST	EXTENDED COST
1	O & G, TOTAL (HEM) [0 day]	Water	$153.00	$153.00
1	SAMPLE PICKUP FEE [0 day]	Water	$22.50	$22.50

Invoice Total: **$175.50**

PPI9270000- 502
32254

COLUMBIA INSPECTION, INC 7133 N. Lombard, Portland, OR 97203 Phone:(503) 286-9464 Fax:(503) 286-5355 E-mail:lab@ColumbiaInspection.

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Portland, OR 97283

PURCHASE INVOICE

Purchase Invoice Number: 5710014

Purchase Invoice Date: 10/04/07

Page: 1

Pay To: COLUMBIA INSPECTION INC
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PORTLAND, OR 97283-0569

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7540 NW Saint Helens Road
Portland, OR 97210

Ship Via		Confirm To	
Receive By	10/10/07	Buyer	
Terms	Net 30 Days from Ship Date	P.O. Number	
Vendor ID	014327008	P.O. Date	10/10/07

Item No.	Description	Unit	Quantity	Unit Price	Total Price
	ENVIRONMENTAL EXPENSE		1	578.00	578.00

Subtotal:	578.00
Invoice Discount:	0.00
Total Sales Tax:	0.00
Total:	578.00

COLUMBIA INSPECTION, INC.

U.S Customs & Border Protection Approved Gaugers
Petroleum and Environmental Laboratory
Tank Calibrations

INVOICE

Invoice Number: 5710014 **Invoice Date:** 10/04/07

071
TO: T.J. Turner
Koppers Industries, Inc.
7540 NW St. Helens Road
Portland, OR 97210-3663

Received
10/02/07

Client
Koppers Industries, Inc.

Project
NPDES Permit Renewal Tests

Work Order(s)
7100206

Comments

Project Number
[none]

PO Number
NA

QUANTITY	ANALYSIS/DESCRIPTION	MATRIX	UNIT COST	EXTENDED COST
1	O & G, TOTAL (HEM) [1 day]	Water	$102.00	$102.00
1	PHENOLS, TOTAL [1 day]	Water	$93.50	$93.50
1	PNAH 8270 [1 day]	Water	$340.00	$340.00
1	TURBIDITY [1 day]	Water	$42.50	$42.50

Invoice Total: **$578.00**

PPI9270000- 467
7/2/1

ORIGINAL

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PURCHASE INVOICE

Purchase Invoice Number: 5705116

Purchase Invoice Date: 05/24/07

Page: 1

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Portland, OR 97210

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Receive By	06/06/07
Terms	Net 30 Days from Ship Date
Vendor ID	014327008

Confirm To	
Buyer	
P.O. Number	
P.O. Date	06/06/07

Item No.	Description	Unit	Quantity	Unit Price	Total Price
	ENVIRONMENTAL EXPENSE		1	203.00	203.00

Subtotal:	203.00
Invoice Discount:	0.00
Total Sales Tax:	0.00
Total:	203.00

CI

COLUMBIA INSPECTION, INC.

U.S Customs & Border Protection Approved Gaugers
Petroleum and Environmental Laboratory
Tank Calibrations

INVOICE

Invoice Number: 5705116 **Invoice Date:** 05/24/07

071
TO: T.J. Turner
Koppers Industries, Inc.
7540 NW St. Helens Road
Portland, OR 97210-3663

Received
05/23/07

Client
Koppers Industries, Inc.

Project
Stormwater Tanks

Work Order(s)
7052301

Comments

Project Number
[none]

PO Number
NA

QUANTITY	ANALYSIS/DESCRIPTION	MATRIX	UNIT COST	EXTENDED COST
1	O & G, TOTAL (HEM) [1 day]	Water	$102.00	$102.00
1	PHENOLS, TOTAL [1 day]	Water	$93.50	$93.50
1	SAMPLE PICKUP FEE [1 day]	Water	$7.50	$7.50

Invoice Total: **$203.00**

PPI9270000-394
PI-25160

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CERTIFICATE OF ANALYSIS

CLIENT: Koppers Industries, Inc.
ATTN: T.J. Turner
7540 NW St. Helens Road
Portland OR, 97210-3663

PHONE: (503) 286-3681
FAX: (503) 285-2831

PROJECT NAME: Stormwater Tanks

SUBMITTED: 05/23/07 10:40

REPORT DATE: 05/24/07 07:19   REPORT NUMBER: 7052301

CI SAMPLE	CLIENTS ID#	DATE	TIME	MATRIX
7052301-01	Stormwater Tanks	05/23/2007	0800	Water

SAMPLE/ ANALYSIS	METHOD	PARAMETER	RESULTS	UNITS	DETECTION LIMIT	TECH	DATE/TIME
7052301-01	**SAMPLE ID: Stormwater Tanks**						
General Bench Analysis							
O & G, TOTAL (HEM)	EPA 1664	TOTAL OIL AND GREASE	ND	mg/L	2.0	JRW	05/23/2007 13:13
PHENOLS, TOTAL	EPA 420.1	TOTAL RECOVERABLE PHENOLICS	0.074	mg/L	0.050	DAU	05/23/2007 15:43

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Charles Morrow - Laboratory Director

COLUMBIA INSPECTION, INC.

U.S Customs & Border Protection Approved Gaugers
Petroleum and Environmental Laboratory
Tank Calibrations

Invoice Number: 5705116

Client
Koppers Industries, Inc.

Work Order(s)
7052301

Project Number
[none]

PO Number
NA

071

TO: T.J. Turner
Koppers Industries, Inc.
7540 NW St. Helens Road
Portland, OR 97210-3663

PURCHASE INVOICE

Purchase Invoice Number: 5704069

Purchase Invoice Date: 04/23/07

Page: 1

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Portland, OR 97210

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Vendor ID	014327008

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Buyer	
P.O. Number	
P.O. Date	04/27/07

Item No.	Description	Unit	Quantity	Unit Price	Total Price
	ENVIRONMENTAL EXPENSE		1	534.50	534.50

Subtotal:	534.50
Invoice Discount:	0.00
Total Sales Tax:	0.00
Total:	534.50

COLUMBIA INSPECTION, INC.

U.S Customs & Border Protection Approved Gaugers
Petroleum and Environmental Laboratory
Tank Calibrations

INVOICE

Invoice Number: 5704069 **Invoice Date:** 04/23/07

071
TO: T.J. Turner
Koppers Industries, Inc.
7540 NW St. Helens Road
Portland, OR 97210-3663

Received
04/19/07

Client
Koppers Industries, Inc.

Project
Stormwater Tanks

Work Order(s)
7041901

Comments

Project Number
[none]

PO Number
NA

QUANTITY	ANALYSIS/DESCRIPTION	MATRIX	UNIT COST	EXTENDED COST
1	O & G, TOTAL (HEM) [1 day]	Water	$102.00	$102.00
1	PHENOLS, TOTAL [1 day]	Water	$93.50	$93.50
1	PNAH 625 [1 day]	Water	$331.50	$331.50
1	SAMPLE PICKUP FEE [1 day]	Water	$7.50	$7.50

Invoice Total: **$534.50**

PPI9270000- 366
PI 22964

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Portland, OR 97283

CI

CERTIFICATE OF ANALYSIS

CLIENT: Koppers Industries, Inc.
ATTN: T.J. Turner
7540 NW St. Helens Road
Portland OR, 97210-3663

PROJECT NAME: Stormwater Tanks

PHONE: (503) 286-3681
FAX: (503) 285-2831

SUBMITTED: 04/19/07 08:25

REPORT DATE: 04/23/07 10:52 REPORT NUMBER: 7041901

CI SAMPLE	CLIENTS ID#	DATE	TIME	MATRIX
7041901-01	Stormwater Tanks	04/19/2007	0730	Water

SAMPLE/ ANALYSIS	METHOD	PARAMETER	RESULTS	UNITS	DETECTION LIMIT	TECH	DATE/TIME
7041901-01	**SAMPLE ID: Stormwater Tanks**						
General Bench Analysis							
O & G, TOTAL (HEM)	EPA 1664	TOTAL OIL AND GREASE	4.6	mg/L	2.0	JRW	04/20/2007 11:06
PHENOLS, TOTAL	EPA 420.1	TOTAL RECOVERABLE PHENOLICS	ND	mg/L	0.050	DAU	04/19/2007 15:22
Semi-Volatile Organics by Gas Chromatography/Mass Spectroscopy							
PNAH 625	EPA 625 (SIM)	ACENAPHTHENE	3.7	ug/L	0.05	DM	04/20/2007 09:21
		ACENAPHTHYLENE	1.1	ug/L	0.05		
		ANTHRACENE	0.8	ug/L	0.05		
		BENZO(a)ANTHRACENE	11.5	ug/L	0.05		
		BENZO(a)PYRENE	9.9	ug/L	0.05		
		BENZO(b)FLUORANTHENE	7.7	ug/L	0.05		
		BENZO(g,h,i)PERYLENE	6.9	ug/L	0.05		
		BENZO(k)FLUORANTHENE	12.3	ug/L	0.05		
		CHRYSENE	12.2	ug/L	0.05		
		DIBENZO(a,h)ANTHRACENE	4.7	ug/L	0.05		
		FLUORANTHENE	22.7	ug/L	0.05		
		FLUORENE	1.1	ug/L	0.05		
		INDENO(1,2,3-cd)PYRENE	4.9	ug/L	0.05		
		NAPHTHALENE	3.4	ug/L	0.05		
		PHENANTHRENE	5.6	ug/L	0.05		
		PYRENE	21.8	ug/L	0.05		
		Surrogate: 2-Fluorobiphenyl	65.6 %	%RECOVERY	50-150		
		Surrogate: Nitrobenzene-D5	80.0 %	%RECOVERY	50-150		
		Surrogate: p-terphenyl-D14	74.3 %	%RECOVERY	50-150		

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Authorized for Release By: Charles Morrow

Charles Morrow - Laboratory Director

COLUMBIA INSPECTION, INC 7133 N. Lombard, Portland, OR 97203 Ph:(503) 286-9464 Fax:(503) 286-5355 E-mail:cilabqa@ColumbiaInspection.com

COLUMBIA INSPECTION, INC.

U.S Customs & Border Protection Approved Gaugers
Petroleum and Environmental Laboratory
Tank Calibrations

Invoice Number: 5704069

Client
Koppers Industries, Inc.

Work Order(s)
7041901

Project Number
[none]

PO Number
NA

071

TO: T.J. Turner
Koppers Industries, Inc.
7540 NW St. Helens Road
Portland, OR 97210-3663

PURCHASE INVOICE

Purchase Invoice Number: 5703156

Purchase Invoice Date: 04/01/07

Page: 1

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Portland, OR 97210

Ship Via	
Receive By	04/04/07
Terms	Net 30 Days from Ship Date
Vendor ID	014327008

Confirm To	
Buyer	
P.O. Number	
P.O. Date	04/04/07

Item No.	Description	Unit	Quantity	Unit Price	Total Price
	ENVIRONMENTAL EXPENSE		1	84.00	84.00

Subtotal:	84.00
Invoice Discount:	0.00
Total Sales Tax:	0.00
Total:	84.00

COLUMBIA INSPECTION, INC.

U.S Customs & Border Protection Approved Gaugers
Petroleum and Environmental Laboratory
Tank Calibrations

INVOICE

Invoice Number: 5703156 **Invoice Date:** 03/30/07

071
TO: T.J. Turner
Koppers Industries, Inc.
7540 NW St. Helens Road
Portland, OR 97210-3663

Received
03/26/07

Client
Koppers Industries, Inc.

Project
Stormwater Tanks

Work Order(s)
7032604

Project Number
[none]

PO Number
NA

Comments

QUANTITY	ANALYSIS/DESCRIPTION	MATRIX	UNIT COST	EXTENDED COST
1	O & G, TOTAL (HEM) [0 day]	Water	$76.50	$76.50
1	SAMPLE PICKUP FEE [0 day]	Water	$7.50	$7.50

Invoice Total: $84.00

PPI9270000- 344
PI - 21755

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CI CERTIFICATE OF ANALYSIS

CLIENT: Koppers Industries, Inc.
ATTN: T.J. Turner
7540 NW St. Helens Road
Portland OR, 97210-3663

PHONE: (503) 286-3681
FAX: (503) 285-2831

PROJECT NAME: Stormwater Tanks

SUBMITTED: 03/26/07 13:20

REPORT DATE: 03/30/07 13:22 REPORT NUMBER: 7032604 PAGE: 1 OF 1

CI SAMPLE	CLIENTS ID#	DATE	TIME	MATRIX
7032604-01	Storm water Tanks	03/26/2007	1030	Water

SAMPLE/ ANALYSIS	METHOD	PARAMETER	RESULTS	UNITS	DETECTION LIMIT	TECH	DATE/TIME	NOTES
7032604-01	**SAMPLE ID: Storm water Tanks**							
General Bench Analysis								
O & G, TOTAL (HEM)	EPA 1664	TOTAL OIL AND GREASE	ND	mg/L	2.0	JRW	03/26/2007 15:10	

General Bench Analysis - Quality Control

Batch/Sample/Analyte	Result	Detection Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
BATCH: Batch 7C23003 - Water Extraction										
QC SAMPLE: Blank (7C23003-BLK1)					Prepared & Analyzed: 03/23/07					
TOTAL OIL AND GREASE	ND	2.0	mg/L							
QC SAMPLE: LCS (7C23003-BS1)					Prepared & Analyzed: 03/23/07					
TOTAL OIL AND GREASE	39.9	2.0	mg/L	43.0		92.8	79-114			
QC SAMPLE: LCS Dup (7C23003-BSD1)					Prepared & Analyzed: 03/23/07					
TOTAL OIL AND GREASE	38.7	2.0	mg/L	43.0		90.0	79-114	3.05	18	
QC SAMPLE: Matrix Spike (7C23003-MS2)			Source: 7032302-01		Prepared: 03/23/07		Analyzed: 03/28/07			
TOTAL OIL AND GREASE	48.8	2.0	mg/L	43.0	9.3	91.9	79-114			

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Charles Morrow - Laboratory Director

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Petroleum and Environmental Laboratory
Tank Calibrations

Invoice Number: 5703156

Client
Koppers Industries, Inc.

Work Order(s)
7032604

Project Number
[none]

PO Number
NA

071

TO: T.J. Turner
Koppers Industries, Inc.
7540 NW St. Helens Road
Portland, OR 97210-3663

PURCHASE INVOICE

Purchase Invoice Number: 5703049

Purchase Invoice Date: 03/13/07

Page: 1

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Ship Via
Receive By 03/20/07
Terms Net 30 Days from Ship Date
Vendor ID 014327008

Confirm To
Buyer
P.O. Number
P.O. Date 03/20/07

Item No.	Description	Unit	Quantity	Unit Price	Total Price
	ENVIRONMENTAL EXPENSE		1	203.00	203.00

Subtotal:	203.00
Invoice Discount:	0.00
Total Sales Tax:	0.00
Total:	203.00

COLUMBIA INSPECTION, INC.

U.S Customs & Border Protection Approved Gaugers
Petroleum and Environmental Laboratory
Tank Calibrations

INVOICE

Invoice Number: 5703049 **Invoice Date:** 03/13/07

071
TO: T.J. Turner
Koppers Industries, Inc.
7540 NW St. Helens Road
Portland, OR 97210-3663

Received
03/12/07

Client
Koppers Industries, Inc.

Project
Stormwater Tanks

Work Order(s)
7031205

Project Number
[none]

PO Number
NA

Comments

QUANTITY	ANALYSIS/DESCRIPTION	MATRIX	UNIT COST	EXTENDED COST
1	O & G, TOTAL (HEM) [1 day]	Water	$102.00	$102.00
1	PHENOLS, TOTAL [1 day]	Water	$93.50	$93.50
1	SAMPLE PICKUP FEE [1 day]	Water	$7.50	$7.50

Invoice Total: **$203.00**

PP19270000- 324
P7. 20850

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Portland, OR 97283

CERTIFICATE OF ANALYSIS

CLIENT: Koppers Industries, Inc.
ATTN: T.J. Turner
7540 NW St. Helens Road
Portland OR, 97210-3663

PROJECT NAME: Stormwater Tanks

PHONE: (503) 286-3681
FAX: (503) 285-2831

SUBMITTED: 03/12/07 12:20

REPORT DATE: 03/13/07 08:38 REPORT NUMBER: 7031205 PAGE: 1 OF 1

CI SAMPLE	CLIENTS ID#	DATE	TIME	MATRIX
7031205-01	Stormwater Tanks	03/12/2007	0830	Water

SAMPLE/ ANALYSIS	METHOD	PARAMETER	RESULTS	UNITS	DETECTION LIMIT	TECH	DATE/TIME
7031205-01	**SAMPLE ID: Stormwater Tanks**						
General Bench Analysis							
O & G, TOTAL (HEM)	EPA 1664	TOTAL OIL AND GREASE	2.2	mg/L	2.0	JRW	03/12/2007 14:31
PHENOLS, TOTAL	EPA 420.1	TOTAL RECOVERABLE PHENOLICS	0.052	mg/L	0.050	DAU	03/12/2007 15:51

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Charles Morrow - Laboratory Director

COLUMBIA INSPECTION, INC.

U.S Customs & Border Protection Approved Gaugers
Petroleum and Environmental Laboratory
Tank Calibrations

Invoice Number: 5703049

Client
Koppers Industries, Inc.

Work Order(s)
7031205

Project Number
[none]

PO Number
NA

071

TO: T.J. Turner
Koppers Industries, Inc.
7540 NW St. Helens Road
Portland, OR 97210-3663

PURCHASE INVOICE

Purchase Invoice Number: 5702203

Purchase Invoice Date: 02/28/07

Page: 1

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Portland, OR 97210

Ship Via	
Receive By	03/06/07
Terms	Net 30 Days from Ship Date
Vendor ID	014327008

Confirm To	
Buyer	
P.O. Number	
P.O. Date	03/06/07

Item No.	**Description**	**Unit**	**Quantity**	**Unit Price**	**Total Price**
	ENVIRONMENTAL EXPENSE		1	109.50	109.50

Subtotal:	109.50
Invoice Discount:	0.00
Total Sales Tax:	0.00
Total:	109.50

COLUMBIA INSPECTION, INC.

U.S Customs & Border Protection Approved Gaugers
Petroleum and Environmental Laboratory
Tank Calibrations

INVOICE

Invoice Number: 5702203 **Invoice Date:** 02/28/07

071
TO: T.J. Turner
Koppers Industries, Inc.
7540 NW St. Helens Road
Portland, OR 97210-3663

Received
02/26/07

Client
Koppers Industries, Inc.

Project
Stormwater Tanks

Work Order(s)
7022602

Comments

Project Number
[none]

PO Number
NA

QUANTITY	ANALYSIS/DESCRIPTION	MATRIX	UNIT COST	EXTENDED COST
1	O & G, TOTAL (HEM) [1 day]	Water	$102.00	$102.00
1	SAMPLE PICKUP FEE [1 day]	Water	$7.50	$7.50

Invoice Total: $109.50

MAR 02 2007

PPI9270000- 307
P7-20044

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CI

CERTIFICATE OF ANALYSIS

CLIENT: Koppers Industries, Inc.
ATTN: T.J. Turner
7540 NW St. Helens Road
Portland OR, 97210-3663

PHONE: (503) 286-3681
FAX: (503) 285-2831

PROJECT NAME: Stormwater Tanks

MAR 0 2 2007

SUBMITTED: 02/26/07 11:00

REPORT DATE: 02/27/07 09:03 **REPORT NUMBER: 7022602**

CI SAMPLE	CLIENTS ID#	DATE	TIME	MATRIX
7022602-01	Stormwater Tanks	02/26/2007	0830	Water

SAMPLE/ ANALYSIS	METHOD	PARAMETER	RESULTS	UNITS	DETECTION LIMIT	TECH	DATE/TIME
7022602-01	**SAMPLE ID: Stormwater Tanks**						
General Bench Analysis							
O & G, TOTAL (HEM)	EPA 1664	TOTAL OIL AND GREASE	2.4	mg/L	2.0	JRW	02/26/2007 14:48

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Charles Morrow - Laboratory Director

CERTIFICATE OF ANALYSIS

CLIENT: Koppers Industries, Inc.
ATTN: T.J. Turner
7540 NW St. Helens Road
Portland OR, 97210-3663

PHONE: (503) 286-3681
FAX: (503) 285-2831

PROJECT NAME: Stormwater Tanks

MAR 0 2 2007

SUBMITTED: 02/26/07 11:00

REPORT DATE: 02/27/07 09:03 REPORT NUMBER: 7022602 PAGE: 1 OF 1

CI SAMPLE	CLIENTS ID#	DATE	TIME	MATRIX
7022602-01	Stormwater Tanks	02/26/2007	0830	Water

SAMPLE/ ANALYSIS	METHOD	PARAMETER	RESULTS	UNITS	DETECTION LIMIT	TECH	DATE/TIME
7022602-01	**SAMPLE ID: Stormwater Tanks**						
General Bench Analysis							
O & G, TOTAL (HEM)	EPA 1664	TOTAL OIL AND GREASE	2.4	mg/L	2.0	JRW	02/26/2007 14:48

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Charles Morrow - Laboratory Director

PURCHASE INVOICE

Purchase Invoice Number: 5702080

Purchase Invoice Date: 02/13/07

Page: 1

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PORTLAND, OR 97283-0569

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To: PORTLAND TERMINAL
7540 NW Saint Helens Road
Portland, OR 97210

Ship Via
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Item No.	Description	Unit	Quantity	Unit Price	Total Price
	ENVIRONMENTAL EXPENSE		1	203.00	203.00

Subtotal:	203.00
Invoice Discount:	0.00
Total Sales Tax:	0.00
Total:	203.00

CI

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Tank Calibrations

INVOICE

Invoice Number: 5702080 **Invoice Date:** 02/13/07

071
TO: T.J. Turner
Koppers Industries, Inc.
7540 NW St. Helens Road
Portland, OR 97210-3663

Received
02/13/07

Client
Koppers Industries, Inc.

Project
Stormwater Tanks

Work Order(s)
7021301

Project Number
[none]

PO Number
NA

Comments

FEB 19 2007

QUANTITY	ANALYSIS/DESCRIPTION	MATRIX	UNIT COST	EXTENDED COST
1	O & G, TOTAL (HEM) [1 day]	Water	$102.00	$102.00
1	PHENOLS, TOTAL [1 day]	Water	$93.50	$93.50
1	SAMPLE PICKUP FEE [1 day]	Water	$7.50	$7.50

Invoice Total: **$203.00**

'PI9270000- 296

P7 19247

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CI CERTIFICATE OF ANALYSIS

CLIENT: Koppers Industries, Inc.
ATTN: T.J. Turner
7540 NW St. Helens Road
Portland OR, 97210-3663

PROJECT NAME: Stormwater Tanks

PHONE: (503) 286-3681
FAX: (503) 285-2831

SUBMITTED: 02/13/07 08:30

REPORT DATE: 02/13/07 13:08 **REPORT NUMBER:** 7021301 **PAGE: 1 OF 1**

CI SAMPLE	CLIENTS ID#	DATE	TIME	MATRIX
7021301-01	Stormwater Tanks	02/13/2007	0730	Water

SAMPLE/ ANALYSIS	METHOD	PARAMETER	RESULTS	UNITS	DETECTION LIMIT	TECH	DATE/TIME
7021301-01	**SAMPLE ID: Stormwater Tanks**						
General Bench Analysis							
O & G, TOTAL (HEM)	EPA 1664	TOTAL OIL AND GREASE	7.0	mg/L	2.0	JRW	02/13/2007 13:09
PHENOLS, TOTAL	EPA 420.1	TOTAL RECOVERABLE PHENOLICS	0.13	mg/L	0.050	DAU	02/13/2007 10:45

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Authorized for Release By: Charles Morrow

Charles Morrow - Laboratory Director

CERTIFICATE OF ANALYSIS

CLIENT: Koppers Industries, Inc.
ATTN: T.J. Turner
7540 NW St. Helens Road
Portland OR, 97210-3663

PHONE: (503) 286-3681
FAX: (503) 285-2831

PROJECT NAME: Stormwater Tanks

SUBMITTED: 02/13/07 08:30

REPORT DATE: 02/13/07 13:08 REPORT NUMBER: 7021301

CI SAMPLE	CLIENTS ID#	DATE	TIME	MATRIX
7021301-01	Stormwater Tanks	02/13/2007	0730	Water

SAMPLE/ ANALYSIS	METHOD	PARAMETER	RESULTS	UNITS	DETECTION LIMIT	TECH	DATE/TIME
7021301-01	**SAMPLE ID: Stormwater Tanks**						
General Bench Analysis							
O & G, TOTAL (HEM)	EPA 1664	TOTAL OIL AND GREASE	7.0	mg/L	2.0	JRW	02/13/2007 13:09
PHENOLS, TOTAL	EPA 420.1	TOTAL RECOVERABLE PHENOLICS	0.13	mg/L	0.050	DAU	02/13/2007 10:45

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Charles Morrow - Laboratory Director

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Invoice Number: 5702080

Client
Koppers Industries, Inc.

Work Order(s)
7021301

Project Number
[none]

PO Number
NA

071

TO: T.J. Turner
Koppers Industries, Inc.
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Portland, OR 97210-3663

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Purchase Invoice Number: 5701136

Purchase Invoice Date: 01/25/07

Page: 1

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Vendor ID	014327008

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P.O. Number	
P.O. Date	01/29/07

Item No.	Description	Unit	Quantity	Unit Price	Total Price
	ENVIRONMENTAL EXPENSE		1	76.50	76.50

Subtotal:	76.50
Invoice Discount:	0.00
Total Sales Tax:	0.00
Total:	76.50

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Tank Calibrations

INVOICE

Invoice Number: 5701136 **Invoice Date:** 01/25/07

071
TO: T.J. Turner
Koppers Industries, Inc.
7540 NW St. Helens Road
Portland, OR 97210-3663

Received
01/23/07

Client
Koppers Industries, Inc.

Project
Stormwater Tanks

Work Order(s)
7012307

Comments

Project Number
[none]

PO Number
NA

QUANTITY	ANALYSIS/DESCRIPTION	MATRIX	UNIT COST	EXTENDED COST
1	O & G, TOTAL (HEM) [3 day]	Water	$76.50	$76.50

Invoice Total: **$76.50**

PPI9270000- 16192
283

JAN 29 2007

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Portland, OR 97210

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Terms	Net 30 Days from Ship Date
Vendor ID	014327008

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P.O. Number	
P.O. Date	01/17/07

Item No.	Description	Unit	Quantity	Unit Price	Total Price
	ENVIRONMENTAL EXPENSE		1	109.50	109.50

Subtotal:	109.50
Invoice Discount:	0.00
Total Sales Tax:	0.00
Total:	109.50

CI

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Tank Calibrations

INVOICE

Invoice Number: 5701053 **Invoice Date:** 01/10/07

071
TO: T.J. Turner
Koppers Industries, Inc.
7540 NW St. Helens Road
Portland, OR 97210-3663

Received
01/08/07

Client
Koppers Industries, Inc.

Project
Stormwater Tanks

Work Order(s)
7010805

Comments

Project Number
[none]

PO Number
NA

QUANTITY	ANALYSIS/DESCRIPTION	MATRIX	UNIT COST	EXTENDED COST
1	O & G, TOTAL (HEM) [1 day]	Water	$102.00	$102.00
1	SAMPLE PICKUP FEE [1 day]	Water	$7.50	$7.50

Invoice Total: **$109.50**

PPI9270000- 277

P7- 17447

JAN 17 2007

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Purchase Invoice Number: 5701014

Purchase Invoice Date: 01/05/07

Page: 1

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Vendor ID	014327008

Confirm To	
Buyer	
P.O. Number	
P.O. Date	01/12/07

Item No.	Description	Unit	Quantity	Unit Price	Total Price
	ENVIRONMENTAL EXPENSE		1	527.00	527.00

Subtotal:	527.00
Invoice Discount:	0.00
Total Sales Tax:	0.00
Total:	527.00

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U.S Customs & Border Protection Approved Gaugers
Petroleum and Environmental Laboratory
Tank Calibrations

INVOICE

Invoice Number: 5701014 **Invoice Date:** 01/05/07

071
TO: T.J. Turner
Koppers Industries, Inc.
7540 NW St. Helens Road
Portland, OR 97210-3663

Received
01/03/07

Client
Koppers Industries, Inc.

Project
Stormwater Tanks

Work Order(s)
7010306

Comments

Project Number
[none]

PO Number
NA

QUANTITY	ANALYSIS/DESCRIPTION	MATRIX	UNIT COST	EXTENDED COST
1	O & G, TOTAL (HEM) [1 day]	Water	$102.00	$102.00
1	PHENOLS, TOTAL [1 day]	Water	$93.50	$93.50
1	PNAH 625 [1 day]	Water	$331.50	$331.50

Invoice Total: **$527.00**

JAN 12 2007

PPI9270000 — 264
PZ17322

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Purchase Invoice Date: 01/03/07

Page: 1

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Buyer
P.O. Number
P.O. Date 01/03/07

Item No.	Description	Unit	Quantity	Unit Price	Total Price
	ENVIRONMENTAL EXPENSE		1	109.50	109.50

Subtotal:	109.50
Invoice Discount:	0.00
Total Sales Tax:	0.00
Total:	109.50

COLUMBIA INSPECTION, INC.

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Tank Calibrations

INVOICE

Invoice Number: 5612195 **Invoice Date:** 12/28/06

071
TO: Amos Kamerer
Koppers Industries, Inc.
7540 NW St. Helens Road
Portland, OR 97210-3663

Received
12/26/06

Client
Koppers Industries, Inc.

Project
Stormwater Tests

Work Order(s)
6122605

Project Number
[none]

PO Number
NA

Comments

QUANTITY	ANALYSIS/DESCRIPTION	MATRIX	UNIT COST	EXTENDED COST
1	O & G, TOTAL (HEM) [1 day]	Water	$102.00	$102.00
1	SAMPLE PICKUP FEE [1 day]	Water	$7.50	$7.50

Invoice Total: **$109.50**

PPI92700000 -251
87/6831

JAN 03 2007

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NW NATURAL AMBIENT INDOOR AIR EVALUATION REPORT

Koppers, Inc. Lease Area
NW Natural - Gasco Site
7900 NW St. Helens Road
Portland, Oregon

February 8, 2006

Project No. 2708

HAI **HAHN AND ASSOCIATES, INC.**
434 NW 6TH AVENUE, SUITE 203
PORTLAND, OREGON 97209-3651
TEL 503.796.0717 • FAX 503.227.2209
www.hahnenv.com

ENVIRONMENTAL CONSULTANTS
ASSESSMENT
INVESTIGATION
REMEDIATION

NW Natural AMBIENT INDOOR AIR EVALUATION REPORT

Koppers Inc. Lease Area
NW Natural – Gasco Site
7900 NW St. Helens Road
Portland, Oregon

February 8, 2006

Prepared for:

NW Natural
Portland, Oregon

Prepared by:

Hahn and Associates, Inc.
Portland, Oregon

HAI Project No. 2708

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APPENDICES

A Clayton Group Services Report

1.0 INTRODUCTION

On behalf of NW Natural, Hahn and Associates, Inc. (HAI) has prepared this report providing results of the ambient indoor air evaluation conducted at the Koppers Inc. (KI) Lease Area facility located on the southern portion of the overall Gasco property, 7900 NW St. Helens Road, Portland, Oregon (Figures 1 and 2). The air evaluation was conducted at the request of the Oregon Department of Environmental Quality (DEQ). Sampling and analytical procedures were conducted in accordance with the DEQ-approved *Final Work Plan for Ambient Indoor Air Evaluation* (HAI 2005b).

The remainder of this report presents background information, a description of field activities, air sample results and discussion, and conclusions and recommendations.

2.0 BACKGROUND

The Gasco site comprises 44.65 acres along the western bank of the Willamette River in a section of northwest Portland zoned by the city as "Heavy Industrial". Pacific Gas & Coke (PG&C) operated a manufactured gas plant (MGP) oil gasification facility (known as the Gasco facility) at the site from 1913 to 1956.

Koppers Inc. (KI) currently leases the southern portion of the Gasco site (approximately 6.4 acres), which is addressed as 7540 NW Saint Helens Road, Portland, Oregon. This portion of the property was the former location of the MGP light oil plant, tank farm, pitch plant, coke ovens, and tar processing areas. Operations by KI's predecessor, Koppers Company, Inc., began in 1966 and have included a coal tar distillation facility, electrode grade pitch manufacturing, and terminal operations for the blending, bulk transfer and distribution of solid coal tar pitch and liquid creosote and coal tar pitch. Currently, the only operation at the Koppers Inc. facility is the distribution of liquid coal tar pitch. The liquid pitch is imported via cargo vessels and then stored at the site prior to distribution via tank truck or tank rail cars.

In order to assess potential MGP-related impacts to the Gasco site, HAI has conducted a remedial investigation (RI) at the site to evaluate the nature and extent of regulated substances in soil and groundwater (HAI 1998 and 2005a). The results of the investigation indicate elevated levels of aromatic hydrocarbons (e.g., benzene, toluene, ethylbenzene, xylene [BTEX] and naphthalene) in shallow groundwater beneath the KI Lease portion of the property. Of the contaminants of interest (COIs) at the site, benzene has the highest vapor pressure and the lowest DEQ Groundwater Risk-Based Concentration (RBC) for a "vapor intrusion into building" exposure pathway.

During a May 2005 meeting, DEQ expressed an interest in the collection of indoor air samples in structures on the KI Lease portion of the Gasco property. NW Natural submitted a work plan to DEQ for conducting the requested activities in a document entitled *Final Work Plan for Ambient Indoor Air Evaluation* (Work Plan) (HAI 2005b). The Work Plan described the air sampling methodology, sample collection locations, and sample analysis and reporting procedures. The objective included in the Work Plan was to collect air samples to evaluate the potential volatilization of aromatic hydrocarbons in groundwater and/or soil, including BTEX and naphthalene, to indoor air in occupied on-site buildings in the KI Lease Area. DEQ approved the work plan in correspondence dated June 21, 2005 (Mr. Matt McClincy to Mr. Bob Wyatt).

The Work Plan described a total of six air samples to be collected and analyzed, including four control/background outdoor air samples.

3.0 FIELD ACTIVITIES

HAI contracted with Clayton Group Services (Clayton) to provide a Certified Industrial Hygienist to conduct the air sampling activities at the KI property. On July 21, 2005, Clayton (accompanied by HAI and KI personnel) collected air samples from six locations at the KI facility. The air samples included two collected from occupied buildings at the facility, plus four control/background outdoor air samples. Background information concerning the two buildings that were sampled, sample locations, and sampling and analysis methodology are described below.

3.1 Building Construction and Operation

The KI facility consists of the pencil pitch storage building, a boiler house building, an office building, an employee service room building, a maintenance shop building, a control room building, and a support building.

The following buildings were identified to be included in the indoor air evaluation since they are representative of potential indoor air quality in the KI lease area and are the buildings that have the greatest frequency of occupation:

- Office Building
- Control Room Building (CRB)

The Office Building contains offices, and had a recirculating heating ventilating and air conditioning "package" system located on the roof-with ceiling mounted supply and return ducts. A fresh air inlet could not be located. The Office Building was determined to be under neutral pressure to the outdoors. Construction information provided by representatives of KI indicates the building is located on a slab-on-grade and the slab is six inches thick.

The CRB had two window air conditioners that did not have physical control options for fresh air supply vent, so it could not be determined if or how much outdoor air was being supplied. The CRB was under neutral pressure to the outdoors. Construction information provided by representatives of KI indicates the building is located on a slab-on-grade and the slab is four inches thick.

3.2 Air Sampling Activities and Locations

Clayton implemented the field work activities for the air sampling event concurrent with a moderately low pressure system passing through the region, providing a conservative atmospheric setting. Clayton's report describing the sampling activities is included as Appendix A. The sampling consisted of deployment of Summa canisters fitted with flow controllers designed to collect air over an eight-hour period. The samples were submitted to Air Toxics Ltd. in Folsom, California for analysis by US Environmental Protection Agency (EPA) Modified Method TO-15 plus naphthalene gas chromatography with mass spectrometry.

Brief descriptions of the six sample locations are provided below and are shown on Figure 2. The sample location numbers presented in the Work Plan were used for the July 21, 2005 sampling event.

Station 1: Office Building, in the main office area.

Station 2: Outdoors, Roof of the Office Building.

Station 3: Control Room Building, in the main room of the building.

Station 4: Outdoors, At Grade, North of Pencil Pitch Storage Building.

Station 5: Outdoors, At Grade, North of the containment wall for the tank farm.

Station 6: Outdoors, At Grade, near the guard shack at the Gasco Site entrance. This structure has since been relocated.

3.3 Sampling Equipment

The air samples were collected using stainless steel evacuated (partial vacuum or negative pressure) 6-liter Summa canisters. The canisters utilized a calibrated precision critical orifice device to slowly collect representative air samples. The canisters were ordered from Air Toxics Ltd., an accredited laboratory located in Folsom, California. All of the canisters were 100% certified and calibrated with matched canister, matched mass flow controller, and matched stainless steel sampling cane. The canisters were set for an 8-hour integrated sample period. The sampling canes were custom ordered to 4.5 feet above the floor or ground to simulate a breathing zone level. The top of each cane was designed with an inverted curve downward to reduce the potential for rain, dust or other debris from being improperly entrained into the sample stream.

For the exterior sample locations, a Brunton Summit Atmospheric Data Center® meter was used to measure wind speed, wind direction, temperature, and barometric pressure.

3.4 Analytical Methods

The air samples were submitted to Air Toxics Ltd. for analysis. Chain of custody procedures were maintained for the samples. The samples were analyzed utilizing EPA Modified TO-15 plus naphthalene gas chromatography with mass spectrometry. Laboratory Quality Control and Quality Assurance standards were conducted and documented. In limited cases (where detected concentrations were greater than method detection limit [MDL] but lower than practical quantitation limit [PQL]) the data was J-Flagged for estimated concentrations. The data were validated and no sample results were invalidated.

4.0 RESULTS AND DISCUSSION

A summary of target analytical method detection and practical quantitation limits for COIs are presented in Table 1, while COI results are summarized in Table 2. Analytical results for other analytes and the laboratory report, including analytical results, data validation, and quality assurance/quality control documentation, are included in Appendix A.

4.1 Screening Levels

Analytical results summarized in Table 2 are compared to the following standards, guidelines, and ambient levels:

- Oregon Department of Consumer & Business Services, Oregon Occupational Safety & Health Division (OR-OSHA), Permissible Exposure Limits (PELs). The PELs (Tables 1 and 2) are regulatory levels that are set to protect workers against the health effects of exposure to hazardous substances. PELs are based on an 8-hour time weighted average exposure.
- DEQ Guidance, Risk-Based Decision making for the Remediation of Petroleum-Contaminated Sites, Appendix A: Table of RBCs (Contaminated Medium of Air, Exposure Pathway via Inhalation with the Receptor Scenario as Occupational) and Table J.4: Generic RBCs for Chlorinated Solvents (Contaminated Medium of Air, Exposure Pathway via Inhalation with the Receptor Scenario as Occupational). The DEQ RBCs (Tables 1 and 2) are guidelines that are used in the evaluation of petroleum-contaminated sites. The RBCs are used as a screening tool; an exceedance of an RBC does not necessarily indicate that an unacceptable risk actually exists or that remedial action is required.
- U.S. National Institute for Occupational Safety and Health (NIOSH), Recommended Exposure Limits (RELs). RELs (Table 2) are 8-hour time weighted average guidelines that are used as general industry standards for employee exposures.
- American Conference of Governmental Industrial Hygienists (ACGIH), 2004 Threshold Limit Values (TLVs) for Chemical Substances and Physical Agents and Biological Exposure Indices (BEIs) booklet. TLVs (Table 2) are 8-hour time weighted average

guidelines that are used as general industry standards for employee exposures.

- Volatile Organic Compound (VOC) data collected from two DEQ ambient air monitoring stations in Portland (Table 2): the Forest Heights Post Office station at 1706 NW 24th Street; and the North Roselawn station located at 24 N. Emerson.
- U.S. EPA Building Assessment and Survey Evaluation (BASE) database of indoor environmental conditions in office buildings (Table 2).

4.2 Results

Six of the 8 aromatic hydrocarbons (toluene, ethylbenzene, m,p-xylene, o-xylene, 1,2,4-trimethylbenzene, 1,3,5-trimethylbenzene) listed in Table 2 were not detected at concentrations exceeding DEQ RBCs (the most conservative of the various screening levels). The concentrations of these constituents, if detected above method detection limits, are also well below OR-OSHA PELs, and NIOSH and ACGIH guidelines. Further, 5 of the 6 chlorinated compounds (trichloroethene, cis-1,2-dichloroethene (DCE), trans-1,2-DCE, 1,1-DCE, and vinyl chloride) listed in Table 2 were not identified at concentrations greater than laboratory method detection limits.

Of the aromatic hydrocarbons, benzene and naphthalene were the only constituents detected in the air samples that exceeded DEQ RBCs. Of the chlorinated compounds, tetrachloroethene (PCE) was the only constituent detected in air (a single sample location) at a concentration greater than the method detection limit, with this single detection exceeding the DEQ RBC. PCE was not identified as a COI with regard to this study, however, it is included in the discussion provided herein since it was identified at a concentration greater than the respective DEQ RBC. The identification of benzene, naphthalene, and PCE within the referenced ambient air samples are described further below.

4.2.1 Benzene

The RBC for benzene is 1.5 ug/m^3. The benzene concentrations in four of the air samples, and one duplicate air sample, exceeded the DEQ RBC for this constituent. The identified concentrations for all samples ranged from 0.74 ug/m^3 (outside, near the former guard shack location) to 4.7 ug/m^3

(outside, north of the Pencil Pitch Storage area) (Figure 3). No pattern could be determined between interior and exterior samples or site location. Although four of the air monitoring stations detected benzene at concentrations greater than the DEQ RBC, all of the detected benzene concentrations are well below OR-OSHA PELs and NIOSH guidelines. There is not an ACGIH guideline for benzene.

DEQ operates two ambient air monitoring stations located in residential/commercial portions of northwest and north Portland, as shown on Table 2. Benzene data are available for these stations. Measured benzene concentrations for the DEQ's Forest Heights Post Office ambient air monitoring station (located at 1706 NW 24th St., Portland, Oregon) range from <0.3 to 5.1 ug/m^3. Measured benzene concentrations for the DEQ's North Roselawn ambient air monitoring station (located at 24 N Emerson Street, Portland, Oregon) range from <0.3 to 7.7 ug/m^3. The range of benzene concentrations identified at the Gasco property (0.74 to 4.7 ug/m^3) are all within the range of benzene concentrations historically detected at the DEQ North Roselawn and Forest Heights Post Office stations.

Benzene concentrations were also compared to EPA's Building Assessment and Survey Evaluation (BASE) data as shown on Table 2. The BASE study has included data collection in over 70 office buildings for different regions throughout the United States (IEQ Strategies 1998). The buildings were selected without regard to indoor air quality concerns, except that buildings with highly publicized indoor air quality problems were excluded. The objective of the BASE study has been to characterize indoor environmental conditions in buildings and provide a database for other researchers to use. In a report on study results, researchers identified VOCs in 41 of the buildings studied. Benzene was detected in 81% to 100% of the analyzed samples, with concentrations ranging from 1.7 to 61 ug/m^3 being identified. The benzene concentrations at the Gasco site (0.74 to 4.7 ug/m^3) are at the lower end of the BASE study range.

The preceding data evaluation suggests that the identified benzene concentrations are present at levels typical for north and northwest Portland, and are within the range identified within typical air quality anticipated for urban (outdoor) or office (indoor) environment. Benzene concentrations identified at indoor sampling locations were similar to concentrations identified at proximate outdoor control sampling locations (Stations #2 and #4).

As indicated above, all of the detected benzene concentrations were compliant with OR-OSHA PELs and NIOSH guidelines.

4.2.2 Naphthalene

The RBC for naphthalene is 13 ug/m^3. The naphthalene concentrations in two of the air samples exceeded the DEQ RBC for this constituent. The identified concentrations for all samples ranged from not detected above the method reporting limit of 4.7 ug/m^3 (at two outside locations, and a duplicate of an outside location) to 41 ug/m^3 (outside, on the roof of the Office Building) (Figure 4). Although two of the identified concentrations were greater than the DEQ RBC (Office Building Roof and Office Building-Interior samples), all of the detected naphthalene concentrations were well below OR-OSHA PELs and NIOSH guidelines. There is not an ACGIH guideline for naphthalene.

The range of concentrations recorded in ambient air at the North Roselawn station is <0.0003 to 0.0125 ug/m^3, and the range of concentrations recorded at the Forest Heights Post Office station is < 0.0082 to 0.0086 ug/m^3. The range of detected naphthalene concentrations at the KI Lease Area (1.9 - 41 ug/m^3) exceed the concentration range reported for the DEQ ambient air monitoring stations. With regard to the EPA BASE Study, naphthalene was detected in 21% to 40% of the analyzed samples, with concentrations ranging from 2.2 to 410 ug/m^3. The naphthalene concentrations at the KI office building (interior and outside on the roof; 39 to 41 ug/m^3) did not exceed the 410 ug/m^3 upper limit of the BASE study range, and are at the lower end of the BASE study range.

The presence of naphthalene at concentrations greater than identified at the DEQ ambient air stations is likely a function of heated coal tar storage / operations at the KI Lease portion of the property. As noted in the Clayton Report (Appendix A), KI was conducting loading/transfer of heated coal tar pitch during the sampling event, resulting in noticeable odor at the time of the air sampling event. Naphthalene is a component of the KI coal tar pitch product and therefore the identified presence of this constituent in nearby air samples is expected. As indicated above, all of the detected naphthalene concentrations were compliant with OR-OSHA PELs, BASE, and NIOSH guidelines.

4.2.3 *PCE*

The RBC for PCE is 1.9 ug/m^3. The only sample to detect PCE above the RBC or the laboratory method detection limit was the sample collected at Station 1 (within the Office Building), where 22 ug/m^3 was identified. The detected PCE concentration is well below the ACGIH guideline and OR-OSHA PELs of 678,000 and 170,000 ug/m^3, respectively (Table 2). There is not a NIOSH guideline for PCE. No PCE data were identified for the north or northwest Portland DEQ Ambient Air Monitoring Stations. With regard to the EPA BASE Study, PCE was detected in 61% to 80% of the analyzed samples, with concentrations ranging from 0.7 to 56 ug/m^3.

The sole identified PCE concentration (22 ug/m^3) at the site is within the middle range of the BASE study range (0.7 to 56 ug/m^3) and therefore would appear likely attributable to the presence of solvent-based office products as described in the Clayton Report (Appendix A). Some common everyday sources of PCE to indoor air within an office environment include glues, paint and spot removers, dry cleaned clothing, and water repellents.

5.0 CONCLUSIONS AND RECOMMENDATIONS

Based on the results of the ambient indoor air evaluation at the KI facility, conclusions and recommendations are as follows:

- Six of the eight aromatic hydrocarbon COIs (toluene, ethylbenzene, m,p-xylene, o-xylene, 1,2,4-trimethylbenzene, 1,3,5-trimethylbenzene) were not detected at concentrations exceeding DEQ RBCs. Where detected, the concentrations of all eight of the aromatic hydrocarbon COIs were well below OR-OSHA PELs, NIOSH, and ACGIH guidelines.
- Benzene concentrations identified at indoor sampling locations were similar to concentrations identified at proximate outdoor control sampling locations
- Identified benzene concentrations are well within the range of concentrations deemed representative of ambient conditions for north and northwest Portland and are representative of benzene concentrations typical for indoor air per the EPA BASE Study.

- Naphthalene concentrations in four samples exceeded the range of concentrations as identified at the DEQ ambient air monitoring stations in northwest and north Portland. Of these, naphthalene concentrations of two samples exceeded DEQ RBCs. However, the elevated naphthalene concentrations were identified within samples collected at locations likely influenced by coal tar pitch unloading activities then being conducted at the site, with the naphthalene likely being a function of volatilization from the heated coal tar pitch.
- PCE concentrations in one sample exceeded the DEQ RBC, but at a concentration that falls within the indoor air study conducted by EPA (i.e., BASE), and appears attributable to the presence of common office products.
- All of the detected benzene, naphthalene, and PCE concentrations are well below OR-OSHA PELs, NIOSH, and ACGIH guideline concentrations.

In summary, and with the exception of naphthalene, results of the air sampling activities described herein do not indicate the presence of aromatic hydrocarbons at levels greater than the typical range of ambient air concentrations for north or northwest Portland. Elevated naphthalene concentrations appear attributable to KI hot coal tar pitch storage and transfer operations conducted during the sampling event.

Because the subsurface contribution of volatile compounds from the subsurface to indoor or outdoor air may fluctuate seasonally, with greater contribution during times of extended low pressure (e.g., Winter), additional testing would appear prudent to evaluate possible increases in hydrocarbon concentrations under Winter season atmospheric conditions.

6.0 LIMITATIONS

The information presented in this report was collected, analyzed, and interpreted following the standards of care, skill, and diligence ordinarily provided by a professional in the performance of similar services as of the time the services were performed. This report and the conclusions and/or recommendations contained in it are based solely upon research and/or observations, and physical sampling and analytical activities, if any, that were conducted at the Client's request.

The information presented in this report is based only upon activities witnessed by HAI or its contractors, and/or upon information provided to HAI by the Client and/or its contractors. The analytical data presented in this report, if any, document only the concentrations of the target analytes in the particular sample, and not the property as a whole.

Unless otherwise specified in writing, this report has been prepared solely for the use by the Client and for use only in connection with the evaluation of the subject property. Any other use by the Client or any use by any other person shall be at the user's sole risk, and HAI shall have neither liability nor responsibility with respect to such use.

Hahn and Associates, Inc.

Prepared by:	Reviewed by:
Jill S. Betts, G.I.T.	Rob B. Ede, R.G.
Project Manager	Sr. Associate

Date February 8, 2006

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7.0 REFERENCES

DEQ (Oregon Department of Environmental Quality), 2003, *Risk-based Decision Making for the Remediation of Petroleum-Contaminated Sites*, September 22, 2003.

HAI (Hahn and Associates, Inc.), 1998, Phase I Remedial Investigation Summary Report and Preliminary Analysis of Soil Data, Northwest Natural – Gasco Facility, 7900 NW St. Helens Road, Portland, Oregon, October 9, 1998.

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HAI (Hahn and Associates, Inc.), 2005b, *Final Work Plan for Ambient Indoor Air Evaluation, Koppers Inc. Lease Area, NW Natural – Gasco Site, 7900 NW Front Avenue, Portland, Oregon*, June 13, 2005.

IEQ Strategies, 1998, *BASE Study Finds 50 VOCs in "Non-Complaint" US Office Buildings,* IEQ Strategies Publication, January 1998.

8.0 GLOSSARY OF ABBREVIATIONS

ACGIH	American Conference of Governmental Industrial Hygienists
BASE	Building Assessment and Survey Evaluation
BEI	biological exposure indices
BTEX	benzene, toluene, ethylbenzene, xylene
Clayton	Clayton Group Services, Inc.
COI	contaminant of interest
DCE	dichloroethene
DEQ	Oregon Department of Environmental Quality
EPA	U.S. Environmental Protection Agency
HAI	Hahn and Associates, Inc.
KI	Koppers, Inc.
MDL	method detection limit
MGP	manufactured gas plant
NIOSH	U.S. National Institute for Occupational Safety and Health
OR-OSHA	Oregon Occupational Safety & Health Division
PCE	tetrachloroethene
PEL	permissible exposure limit
PG&C	Portland Gas & Coke
PQL	practical quantitation limit
RBC	risk-based concentration
REL	recommended exposure limits
RI	remedial investigation
TLV	threshold limit values
ug/m^3	micrograms per cubic meter of air
VOCs	volatile organic compounds

TABLES

TABLE 1 - Modified EPA Method TO-15
Analytical Limits (No Dilution), RBCs, and PELs

Analyte	Method Detection Limit	Practical Quantitation Limit	DEQ Occupational Risk-Based Concentration (RBC_{air})[1]	OR-OSHA Permissable Exposure Limit (PEL)
	(ug/m^3)			
Benzene	0.10	0.52 - 0.58	1.5	3,190
Toluene	0.08	0.62 - 0.69	1,600.	754,000
Ethybenzene	0.13	0.71 - 0.79	4,200.	435,000
m,p-Xylene	0.13	0.71 - 0.79	420[2]	435,000
o-Xylene	0.17	0.71 - 0.79	420[2]	435,000
1,2,4-Trimethylbenzene	0.10	0.81 - 0.90	25.	-
1,3,5-Trimethylbenzene	0.15	0.81 - 0.90	25.	-
Naphthalene	1.05	4.3 - 4.8	13.	50,000
Trichloroethene	0.27	0.88 - 0.98	0.1	537,000
Tetrachloroethene	0.20	1.10 - 1.20	1.9	678,000
cis-1,2-Dichloroethene	0.36	0.68 - 0.78	150.	-
trans-1,2-Dichloroethene	0.24	3.2 - 3.6	290.	-
1,1-Dichloroethene	0.20	0.65 - 0.72	830.	-
Vinyl chloride	0.10	0.42 - 0.47	2.6	2,560

Notes:
DEQ = Oregon Department of Environmental Quality
OR-OSHA = Oregon Occupational Safety & Health Division
 - = there is no PEL for this compound
ug/m^3 = micrograms per cubic meter of air
1 = from Risk-Based Decision Making for the Remediation of Petroleum-Contaminated Sites,
DEQ, September 22, 2003, Occupational Exposure Pathway
2 = RBC is for total xylenes

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TABLE 2 - Summary of Analytical Results for Contaminants of Interest in Air Samples by Modified EPA Method TO-15

Sample Location	Benzene		Toluene		Ethyl Benzene		m,p-Xylene		o-Xylene		1,2,4-Trimethylbenzene		1,3,5-Trimethylbenzene	
	ppbv	ug/m³	ppbv	ug/m³	ppbv	ug/m³	ppbv	ug/m³	ppbv	ug/m³	ppbv	ug/m³	ppbv	ug/m³
Station #1 Office Building	0.69	**2.2**	37.	140.	2.1	9.2	10.	44.	2.9	13.	0.16 J	0.79 J	0.063 J	0.31 J
Station #2 Outside, Roof of Office Building, Control/Background	1.0	**3.3**	0.84	3.2	0.18	0.79	0.4	1.8	0.14 J	0.61 J	0.12 J	0.56 J	ND	ND
Station #3 Control Room Building	1.0	**3.4**	0.76	2.9	0.12 J	0.54 J	0.4	1.7	0.14 J	0.6 J	0.1 J	0.5 J	ND	ND
Station #4 Outside, North of Pencil Pitch Area, Control/Background	1.5	**4.7**	1.1	4.3	0.18	0.79	0.61	2.6	0.22	0.95	0.15 J	0.72 J	ND	ND
Station #4 Outside, North of Pencil Pitch Area, Control/Background Duplicate	1.4	**4.6**	1.2	4.4	0.17	0.76	0.57	2.5	0.2	0.88	0.16 J	0.77 J	ND	ND
Station #5 Outside, North of Tank Farm, Control/Background	0.25	0.8	0.43	1.6	0.075 J	0.32 J	0.26	1.1	0.076 J	0.33 J	0.06 J	0.29 J	ND	ND
Station #6 Outside, Near Guard Shack, Control/Background	0.23	0.74	0.44	1.7	0.086 J	0.37 J	0.32	1.4	0.097 J	0.42 J	0.065 J	0.32 J	ND	ND
DEQ RBC[1]	–	1.5	–	1,600	–	–	–	420	–	420	–	25	–	25
OR-OSHA 8-Hour TWA-PEL	1,000	3,190	$2.0x10^5$	$7.54x10^5$	$1.0x10^5$	$4.35x10^5$	$1.0x10^5$	$4.35x10^5$	$1.0x10^5$	$4.35x10^5$	–	–	–	–
NIOSH TWA-REL	100	320	$1.0x10^5$	$3.75x10^5$	$1.0x10^5$	$4.35x10^5$	$1.0x10^5$	$4.35x10^5$	$1.0x10^5$	$4.35x10^5$	$2.5x10^4$	$1.25x10^5$	$2.5x10^4$	$1.25x10^5$
ACGIH TWA-TLV	500	–	$5.0x10^4$	–	$1.0x10^5$	–	$1.0x10^5$	–	$1.0x10^5$	–	–	–	–	–
US EPA BASE	–	1.7 - 61	–	3.8 - 390	–	1.2 - 20	–	4.0 - 69	–	1.1 - 15	–	1.2 - 93	–	1.2 - 11
Portland Forest Heights Post Office (1999-2003)	< 0.1 - 1.6	< 0.3 - 5.1	< 0.1 - 7.7	–	< 0.1 - 1.6	–	< 0.1 - 6.5	–	< 0.1 - 2.0	–	–	–	–	–
Portland North Roselawn (1999-2003)	< 0.1 - 2.4	< 0.3 - 7.7	< 0.1 - 7.6	–	< 0.1 - 1.8	–	< 0.1 - 7.7	–	< 0.1 - 2.9	–	–	–	–	–

Notes:
ppbv: parts per billion-volume
ug/m3: micrograms per cubic meter
US EPA: United States Environmental Protection Agency
BASE: Building Assessment and Suvey Evaluation
OR-OSHA: Oregon Occupational Safety & Health Admin.
NIOSH: National Institute for Occupational Safety & Health
ACGIH: American Conf. of Governmental Industrial Hygienists
TWA: Time-Weighted Average
PEL: Permissible Exposure Limit
RBC: Risk-Based Concentration
REL: Recommended Exposure Limit
TLV: Threshold Limit Value
DEQ: Department of Environmental Quality
ND: Not Detected
J: Estimated value, identified concentration is below laboratory Practical Quantitation Limit
Bold: Exceeds DEQ RBC
*: 10-hour TWA
1 = from *Risk-Based Decision Making for the Remediation of Petroleum-Contaminated Sites*, DEQ, September 22, 2003, Occupational Exposure Pathway

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TABLE 2 - Summary of Analytical Results for Contaminants of Interest in Air Samples by Modified EPA Method TO-15

Sample Location	Naphthalene		Tetrachloroethene		Trichloroethene		cis-1,2-Dichloroethene		trans-1,2-Dichloroethene		1,1-Dichloroethene		Vinyl Chloride	
	ppbv	ug/m^3	ppbv	ug/m^3	ppbv	ug/m^3	ppbv	ug/m^3	ppbv	ug/m^3	ppbv	ug/m^3	ppbv	ug/m^3
Station #1 Office Building	7.4	**39.**	3.3	**22**	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Station #2 Outside, Roof of Office Building, Control/Background	7.8	**41.**	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Station #3 Control Room Building	1.8	9.4	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Station #4 Outside, North of Pencil Pitch Area, Control/Background	0.37 J	1.9 J	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Station #4 Outside, North of Pencil Pitch Area, Control/Background Duplicate	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Station #5 Outside, North of Tank Farm, Control/Background	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Station #6 Outside, Near Guard Shack, Control/Background	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
DEQ RBC[1]	–	13	–	1.90	–	0.10	–	150	–	290	–	830	–	2.6
OR-OSHA 8-Hour TWA-PEL	$1.0x10^4$	$5.0x10^4$	$1.0x10^5$	678,000	$1.0x10^5$	$5.37x10^5$	–	–	–	–	–	–	1000	2560
NIOSH TWA-REL	$1.0x10^4$	$5.0x10^4$	–	–	$2.5x10^{4*}$	–	–	–	$2.0x10^5$	$7.9x10^5$	–	–	–	–
ACGIH TWA-TLV	$1.0x10^4$	–	$2.5x10^4$	170,000	$5.0x10^4$	–	$2.0x10^5$	–	$2.0x10^5$	–	5000	–	1000	–
US EPA BASE	–	2.2 - 410	–	0.7 - 56	–	0.9 - 90	–	–	–	–	–	–	–	7.5
Portland Forest Heights Post Office (1999-2003)	–	< 0.0082 - 0.0086	–	–	< 0.1 - 0.12	–	< 0.10	–	–	–	–	–	< 0.1	–
Portland North Roselawn (1999-2003)	–	< 0.0003 - 0.0125	–	–	< 0.1 - 0.12	–	< 0.10	–	–	–	–	–	< 0.1	–

Notes:
ppbv: parts per billion-volume
ug/m3: micrograms per cubic meter
US EPA: United States Environmental Protection Agency
BASE: Building Assessment and Suvey Evaluation
OR-OSHA: Oregon Occupational Safety & Health Admin.
NIOSH: National Institute for Occupational Safety & Health
ACGIH: American Conf. of Governmental Industrial Hygienists
TWA: Time-Weighted Average
PEL: Permissible Exposure Limit
RBC: Risk-Based Concentration
REL: Recommended Exposure Limit
TLV: Threshold Limit Value
DEQ: Department of Environmental Quality
ND: Not Detected
J: Estimated value, identified concentration is below laboratory Practical Quantitatic
Bold: Exceeds DEQ RBC
*: 10-hour TWA
1 = from *Risk-Based Decision Making for the Remediation of Petroleum-Contamin*
DEQ, September 22, 2003, Occupational Exposure Pathway

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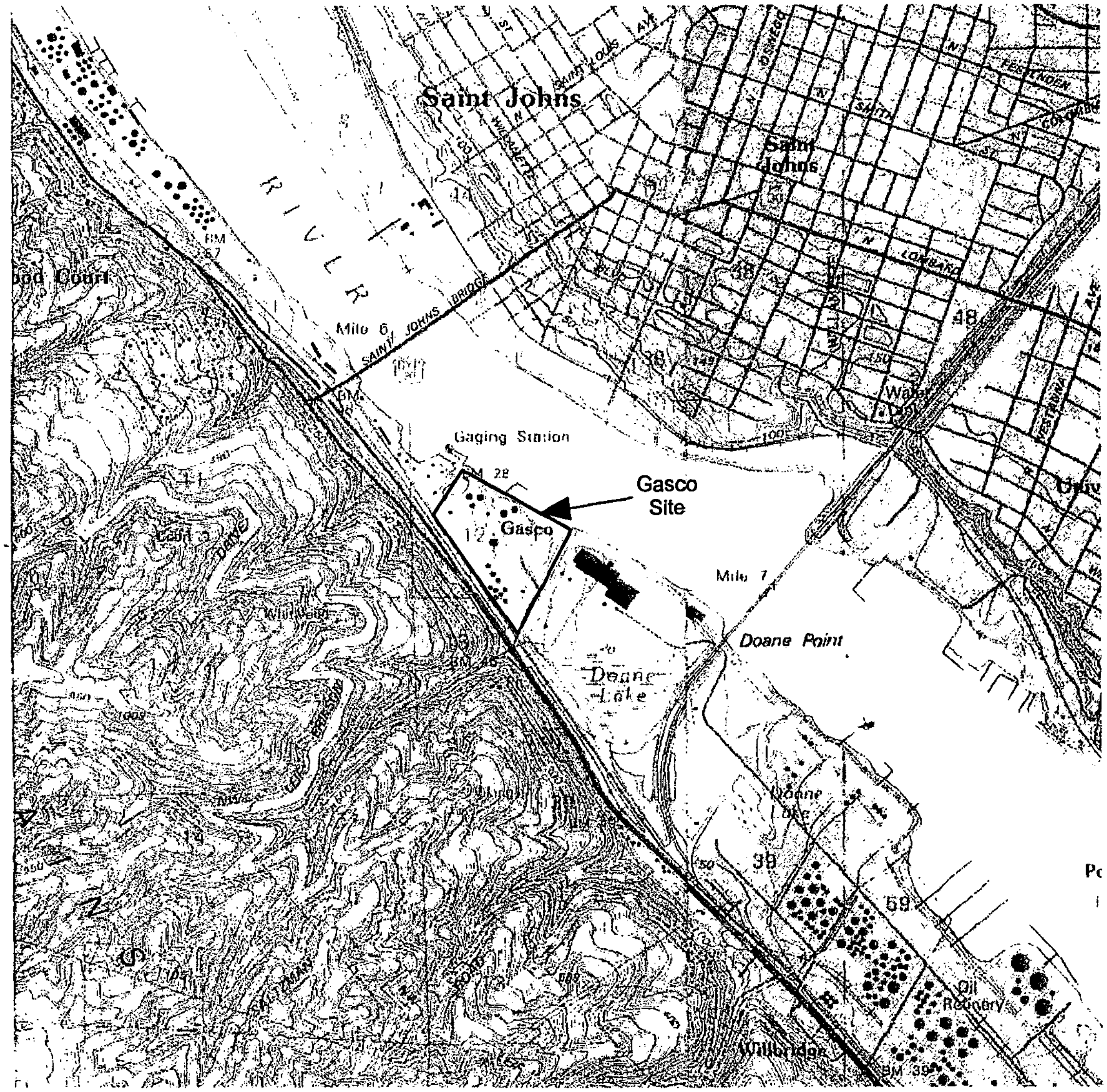
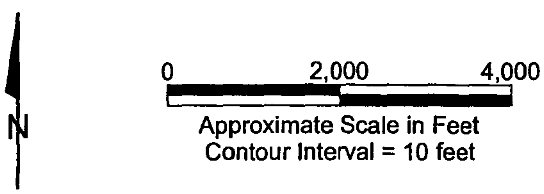
FIGURES



Note: Base Map from Linnton (1990) and Portland (1990), Oregon, USGS 7.5-Minute Quadrangles



Approximate Scale in Feet
Contour Interval = 10 feet

FIGURE 1

Location Map

Koppers, Inc. Lease Area
NW Natural Gasco Site
7900 NW St. Helens Road
Portland, Oregon

HAHN AND ASSOCIATES, INC.

Project No. 2708 December 2005

File: 2708-01 Location Map

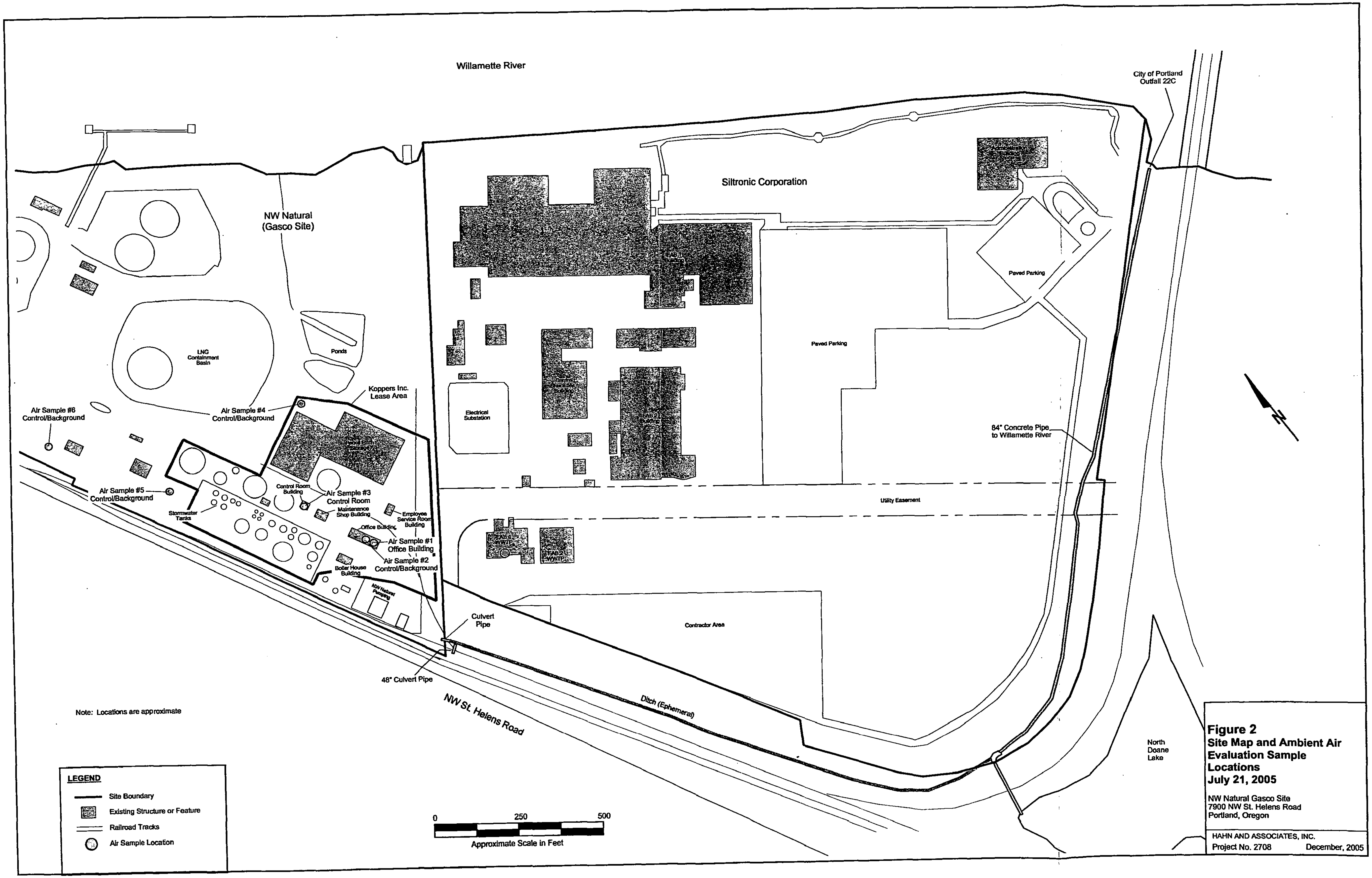


Figure 2
Site Map and Ambient Air Evaluation Sample Locations
July 21, 2005

NW Natural Gasco Site
7900 NW St. Helens Road
Portland, Oregon

HAHN AND ASSOCIATES, INC.
Project No. 2708 December, 2005

Koppers021321

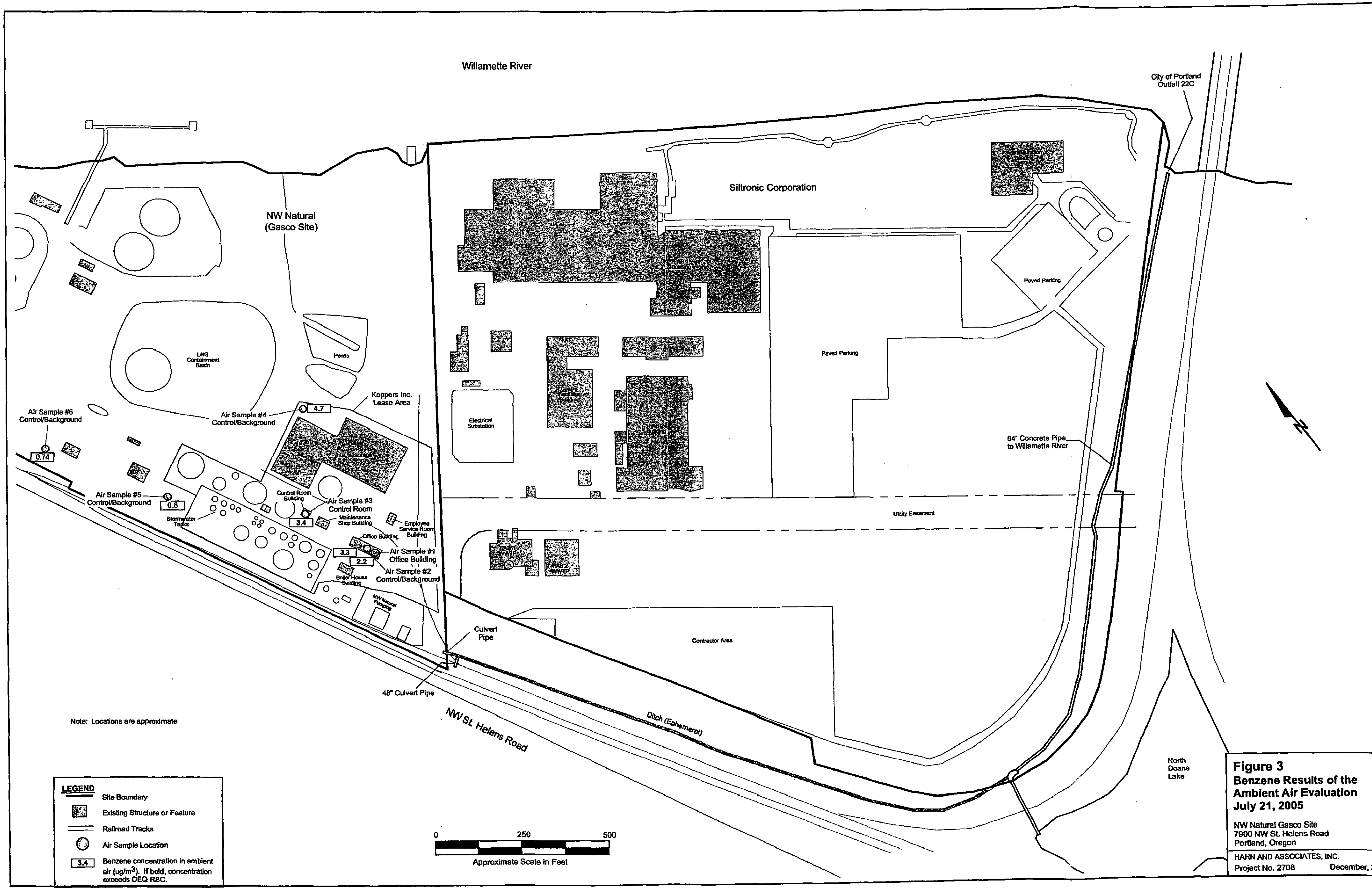


Figure 3
Benzene Results of the Ambient Air Evaluation
July 21, 2005

NW Natural Gasco Site
7900 NW St. Helens Road
Portland, Oregon

HAHN AND ASSOCIATES, INC.
Project No. 2708 December, 2005

Koppers021322

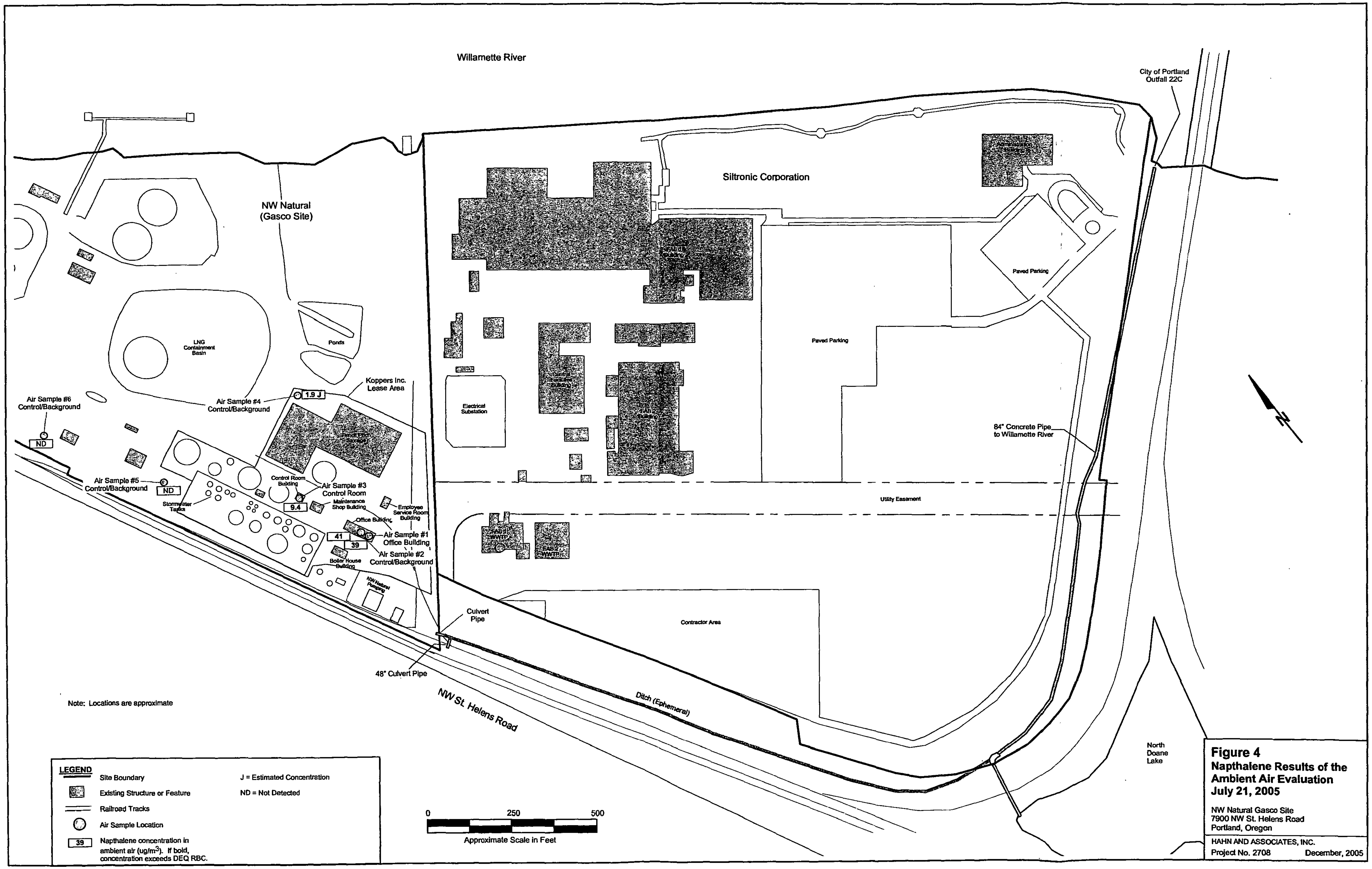


Figure 4
Napthalene Results of the Ambient Air Evaluation
July 21, 2005

NW Natural Gasco Site
7900 NW St. Helens Road
Portland, Oregon

HAHN AND ASSOCIATES, INC.
Project No. 2708 December, 2005

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APPENDICES

A

APPENDIX A

Clayton Group Services Report

Ambient Indoor Air Evaluation

Prepared for:

Hahn & Associates, Inc.

Portland, Oregon

Koppers Inc.
7540 NW Saint Helens Road
Portland, Oregon

Clayton Project Number 65-06003.00
February 9, 2006

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3.1	SAMPLE MONITORING	2
3.2	WEATHER MONITORING	2
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Tables

1 Analytical Results

2 Sample Conditions at Koppers Site

Appendices

Laboratory Data Sheets

1.0 INTRODUCTION

Hahn and Associates, Inc. (Hahn) authorized Clayton Group Services, Inc. (Clayton), a Bureau Veritas Company, to conduct supplemental ambient indoor and outdoor air evaluations in and around the current Koppers Inc. site located at 7540 NW Saint Helens Road, Portland, Oregon. The air sampling project was conducted for NW Natural at the request of the Oregon Department of Environmental Quality (DEQ). Air sampling was conducted for volatile organic compounds (VOC) including trichloroethene (TCE), its breakdown products, BTEX (benzene, toluene, ethyl benzene and xylene) and naphthalene. Summa canisters were used for typical full shift or 8-Hour Time Weighted Average (TWA) exposure assessments. The samples were analyzed utilizing EPA Modified Method TO-15 gas chromatography with mass spectrometry. The analysis was conducted for the entire TO-15 list of chemicals plus naphthalene. Site access was coordinated with Koppers staff.

The scope of Clayton's services was described in the proposal letter PR-65OH05.196R Revised to Hahn and Associates.

In conducting this assessment, the following tasks were performed:

- Reviewed reports of remedial assessments performed at an adjacent site and the NW Natural former manufactured gas plant site.
- Utilized the DEQ approved Work Plan (dated June 13, 2005), for sample locations, analysis and reporting procedures.
- Conducted area monitoring for VOC and naphthalene at two interior locations within two different buildings and four exterior locations around the site.
- Measured the site conditions at each of the locations including the weather at the exterior locations.

Mr. Scott Turkle, Certified Industrial Hygienist, with Clayton conducted the assessment on July 21, 2005. Mr. Mark Whitson with Hahn and Associates provided coordination and assistance. Mr. T.J. Turner with Koppers Inc. provided site access, coordination and assistance.

2.0 BACKGROUND

Koppers Inc. leases a portion of land and currently operates a distribution facility for liquid coal tar pitch. The heated liquid coal tar pitch is imported via cargo ships, stored on site and shipped via tank rail cars or tanker trucks. Railroad siding tracks are utilized onsite and a main rail line is adjacent to the property. The coal tar distillation facility and solid pencil pitch storage facility is present on the site but are not currently active. A manufactured gas plant oil gasification facility used to operate on the property.

3.0 METHODOLOGY

3.1 SAMPLE MONITORING

Summa canisters were set up in pre-approved sample locations at interior building locations and ground level site locations. Stainless steel evacuated (partial vacuum or negative pressure) 6-liter Summa canisters utilize a calibrated precision critical orifice device to slowly collect representative air samples. The Summa canisters were ordered from and analyzed by Air Toxics, Limited. Air Toxics, Limited is an accredited laboratory located in Folsom, California. All Summa canisters were 100% certified and calibrated with matched canister, matched mass flow controller and matched stainless steel sampling cane. They were set for an 8-hour (full work shift) integrated sampling period. The sampling canes were custom ordered to 4.5 foot above the floor or ground to simulate a breathing zone level. The use of matched canes allowed the Summa canisters to be consistent in height while not having to be on table tops, desk tops or other surfaces where they could be knocked off or interfere with building occupants. The top of each cane was designed with an inverted curve downward to reduce the potential for rain, dust or other debris from being improperly entrained into the sample stream.

Summa canisters were placed in the specified locations, according to the DEQ approved locations, directly on the floor or ground in areas not likely to be bumped or disturbed by facility staff. Initial Summa canister vacuum pressure was recorded and monitored until the end of the sample period or pressure equilibrium. In areas with potential impacts or outside wind, the Summa canisters were secured in place with wire. Employees working adjacent to the sample locations were informed of the activity. Identification signs were attached to inform all employees. Routine inspection of the Summa canisters was conducted throughout the sample period. All Summa canisters had sufficient vacuum pressure to complete the planned 8-hour sample period. At the end of the 8-hour sample period, the final cylinder vacuum pressure was recorded and the valves were closed. Chain of custody forms were completed and all samples were maintained under direct supervision or locked until shipped via overnight air to the laboratory.

3.2 WEATHER MONITORING

As requested by DEQ, sampling was scheduled during a low pressure front passing through the region.

Exterior Summa canister locations were subject to prevailing weather conditions. A Brunton Summit Atmospheric Data Center® meter was used for wind speed, wind direction, temperature and barometric pressure. The weather conditions for the exterior samples are reported in Table 2.

3.3 LABORATORY ANALYTICAL METHOD

Chain of custody procedures was maintained for the samples. No samples were invalidated. The samples were analyzed utilizing EPA Modified Method TO-15 plus naphthalene gas chromatography with mass spectrometry. Laboratory Quality Control and Quality Assurance standards were conducted and documented. The data was validated and J-Flagged.

4.0 GUIDELINES AND STANDARDS

The following standards and guidelines were utilized for this assessment:

- Oregon Department of Environmental Quality (DEQ) Risk-Based Decision Making for the Remediation of Petroleum-Contaminated Sites, September 2003, Appendix A: Table of RBCs (Contaminated Medium of Air, Exposure Pathway via Inhalation with the Receptor Scenario as Occupational) and Table J.4: Generic RBCs for Chlorinated Solvents (Contaminated Medium of Air, Exposure Pathway via Inhalation with the Receptor Scenario as Occupational)
- Oregon Department of Consumer & Business Services, Oregon Occupational Safety & Health Division (OR-OSHA), 8-Hour TWA Permissible Exposure Limits (PELs)
- US Environmental Protection Agency (EPA) Building Assessment and Survey Evaluation (BASE) database of indoor environmental conditions in buildings
- US National Institute for Occupational Safety and Health (NIOSH), Recommended Exposure Limits (RELs), January 2003
- American Conference of Governmental Industrial Hygienists (ACGIH), 2005 Threshold Limit Values (TLVs) for Chemical Substances and Physical Agents and Biological Exposure Indices (BEIs) booklet

5.0 AREA MONITORING RESULTS

The area VOC monitoring results are summarized in Table 1 with full laboratory results included in the Appendix. Sample Conditions are summarized in Table 2. Many of the samples did not have detectable airborne concentrations for most of the individual chemicals analyzed by the EPA TO-15 Method.

None of the samples detected levels at or near the Oregon Occupational Safety & Health Division Permissible Exposure Limits. None of the samples detected levels at or near the NIOSH RELs or ACGIH TLV recommended levels.

Benzene was detected above the DEQ RBC level of 1.5 micrograms per cubic meter (ug/m^3) of air in Sample Station #1 at 2.2 ug/m^3, #2 at 3.3 ug/m^3, #3 at 3.4 ug/m^3 and #4 at 4.7 ug/m^3. The range was between 0.74 ug/m^3 and 4.7 ug/m^3, which were both outdoor samples. No pattern could be determined between interior and exterior samples or site location.

Trichloroethene was not detected in any of the samples.

Naphthalene was detected above the DEQ RBC of 13 ug/m^3 in Sample Station #1 at 39 ug/m^3 and #2 at 41 ug/m^3. Two samples did not have detectable concentrations and the other samples had a range between 1.9 ug/m^3 and the 41 ug/m^3.

Tetrachloroethene was detected above the DEQ RBC of 1.9 ug/m^3 in Sample Station #1 at 22 ug/m^3. All other samples did not have detectable levels.

6.0 OBSERVATIONS AND DISCUSSION

The facility operations proceeded typically throughout the sampling period. Several tanker rail cars were observed being loaded with warmed coal tar pitch during the sampling period. All building ventilation systems were operating as usual as reported by the available site staff.

Air samples were taken inside a typically occupied Office Building and the Control Room Building. Typical office usage chemicals were present including a copier machine, computer printer, ink pens, marker pens, high lighter pens, 'white out' supplies and other solvent based items. The Office Building had a recirculating heating ventilating and air conditioning 'package' system located on the roof. The site employees or Clayton staff could not locate a fresh air inlet. The Office Building has ceiling mounted supply and return ducts. The Control Room had two typical window air conditioners that did not have a fresh air supply control option so it could not be determined if or how much outdoor air was being supplied. The Office Building and the Control Room Building were both under neutral pressure to the outdoors.

Limited vehicle use is allowed within the fenced-in facility with full employee access and parking allowed within the fenced-in site. The site has an active railroad siding and railroad use adjacent to the west fence with busy US Highway 30 just beyond that. The Willamette River on the north side is busy with commercial and private boats. Benzene is commonly present in motor vehicle fuels (boats, trains, cars and trucks) and commonly found in urban and port areas. The air samples reported by DEQ in an air survey at the Portland Forest Heights Post Office and Portland North Roselawn detected levels ranging from <0.3 to 7.7 ug/m^3.

Typical creosote or pitch odors believed to be from the pitch handling activities or railroad track ties were noted during sample setup and periodic sample inspection on the site.

The weather was hot with clear sunny skies, calm winds and a moderately low pressure weather system. Calm winds could reduce the mixing or dilution effect from any potential chemical source. Less wind also tends to keep potential air pollution within the river valley.

OR-OSHA has authority for this site and their regulations meet or exceed the US Federal OSHA regulations. OR-OSHA 8-Hour TWA PELs are included since the employees are potentially being exposed to these chemicals in the workplace. PELs are set to protect typical workers in an occupational exposure location. The NIOSH and ACGIH 8-Hour TWA recommendations are not regulations but are provided as general industry standards for employee exposures.

The components and the break down by-products of petroleum products are commonly called BTEX for benzene, toluene, ethyl benzene and xylenes. Air sample concentrations consistent with typical urban locations were detected and consistent with the DEQ reported air survey at the Portland Forest Heights Post Office and Portland North Roselawn. Trichloroethene and its breakdown by-products, including 1, 1-dichloroethene, vinyl chloride, trans-1, 2-dichloroethene and cis-1, 2-dichloroethene, were low or non-detected.

Clayton GROUP SERVICES

The US EPA Building Assessment and Survey Evaluation (BASE) reports that certain typical chemicals including BTEX are commonly found in buildings. Reported typical levels include: benzene at 1.7 to 61 ug/m^3, toluene at 3.8 to 390 ug/m^3, m and p-xylenes at 4.0 to 69 ug/m^3, o-xylene at 1.1 to 15 ug/m^3, acetone at 12 to 240 ug/m^3, ethanol at 1.5 to 300 ug/m^3 and iso-propanol at 3.7 to 570 ug/m^3. The DEQ reported air survey at the Portland Forest Heights Post Office and Portland North Roselawn are within similar levels to those reported in the US EPA BASE report and the results of this study.

7.0 CONCLUSIONS

Clayton's conclusions are based on its observations, including results from the Summa canister monitoring. Per the scope of work in the surveyed areas, no occupational safety and health conditions were discovered that appear to violate any of the OR-OSHA or Federal OSHA regulations for 8-Hour Time Weighted Average Permissible Exposure Levels.

Benzene, naphthalene and tetrachloroethene were the only chemicals to exceed the DEQ Risk Based Concentrations (RBC) for inhalation based exposures in air in an occupational scenario. The RBC for benzene is 1.5 ug/m^3, the RBC for naphthalene is 13 ug/m^3 and the RBC for tetrachloroethene is 1.9 ug/m^3. However, all identified levels were within the range typical for urban air.

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February 9, 2006

TABLES

TABLE 1
Analytical Results
for the
Koppers Facility in Portland, Oregon
Clayton Project No.: 65-06003.00
July 21, 2005

Sample Location	Freon 12		Freon 114		Chloromethane		Vinyl Chloride		Bromomethane		Chloroethane		Freon 11		1,1-Dichloroethene		Freon 113		1,1-Dichloroethane		cis-1,2-Dichloroethene	
	ppbv	ug/m^3	ppbv	ug/m^3	ppbv	ug/m^3	ppbv	ug/m^3	ppbv	ug/m^3	ppbv	ug/m^3	ppbv	ug/m^3	ppbv	ug/m^3	ppbv	ug/m^3	ppbv	ug/m^3	ppbv	ug/m^3
Station 1: In Office Building in the main office area, near west wall, between the desks	0.36	1.8	ND	ND	0.52	1.1	ND	ND	ND	ND	ND	ND	0.39	2.2	ND	ND	ND	ND	ND	ND	ND	ND
Station 2: Outdoors, on roof of the Office Building, center, south side of HVAC unit	0.18	1.1	ND	ND	0.48	0.99	ND	ND	0.10 J	0.39 J	ND	ND	0.25	1.4	ND	ND	ND	ND	ND	ND	ND	ND
Station 3: In Control Room Building, in main room, west of west desk	0.46	2.3	ND	ND	0.48	1.0	ND	ND	ND	ND	ND	ND	0.27	1.5	ND	ND	ND	ND	ND	ND	ND	ND
Station 4: Outdoors, at grade, north of Pencil Pitch Storage Building, ~28 feet northeast of north corner of building	0.47	2.3	ND	ND	0.50	1.0	ND	ND	ND	ND	ND	ND	0.27	1.5	ND	ND	ND	ND	ND	ND	ND	ND
Station 5: Outdoors, at grade, north of the containment wall for the tank farm, ~65 feet west of tank	0.51	2.5	ND	ND	0.49	1.0	ND	ND	ND	ND	ND	ND	0.28	1.6	ND	ND	ND	ND	ND	ND	ND	ND
Station 6: Outdoors, at grade, southeast of Guard Shack at the Gasco Site entrance, by fence	0.48	2.4	ND	ND	0.46	0.95	ND	ND	ND	ND	ND	ND	0.27	1.5	ND	ND	ND	ND	ND	ND	ND	ND
US EPA BASE	--	--	--	--	--	1.3 - 22	--	7.5	--	1.1 - 4.6	--	1.4 - 57	--	1.7 - 170	--	--	--	--	--	--	--	--
OR-OSHA 8-Hour TWA-PEL	1.0×10^{6}	4.95×10^{6}	1.0×10^{6}	7.0×10^{6}	1.0×10^{5}	2.05×10^{5}	1000	--	--	--	1.0×10^{6}	2.6×10^{6}	1.0×10^{6}	5.6×10^{6}	--	--	1.0×10^{6}	7.6×10^{6}	1.0×10^{5}	4.0×10^{5}	--	--
NIOSH 8-Hour TWA-REL	1.0×10^{6}	4.95×10^{6}	1.0×10^{6}	7.0×10^{6}	--	--	--	--	--	--	--	--	--	--	--	--	1.0×10^{6}	7.6×10^{6}	1.0×10^{5}	4.0×10^{5}	--	--
ACGIH 8-Hour TWA-TLV	1.0×10^{6}	--	1.0×10^{6}	--	5.0×10^{4}	--	1000	--	1000	--	1.0×10^{5}	--	--	--	5000	--	1.0×10^{6}	--	1.0×10^{5}	--	2.0×10^{5}	--
DEQ RBDM, Remediation of Petroleum-Contaminated Sites	--	--	--	--	--	--	--	2.6	--	--	--	--	--	--	--	830	--	--	--	--	--	150
Portland Forest Heights Post Office (1999-2003)	--	--	--	--	--	--	< 0.1	--	--	--	--	--	--	--	--	--	--	--	--	--	< 0.10	--
Portland North Roselawn (1999-2003)	--	--	--	--	--	--	< 0.1	--	--	--	--	--	--	--	--	--	--	--	--	--	< 0.10	--

Notes:
ppbv: parts per billion-volume
ug/m^3: micrograms per cubic meter
US EPA: United States Environmental Protection Agency
BASE: Building Assessment and Survey Evaluation
OR-OSHA: Oregon Occupational Safety & Health Administration
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TWA: Time-Weighted Average
PEL: Permissible Exposure Limit
REL: Recommended Exposure Limit
TLV: Threshold Limit Value
DEQ: Oregon Department of Environmental Quality
RBDM: Risk-Based Decision Making
ND: Not Detected
J: Estimated value
E: Exceeds instrument calibration range
*: 10-hour TWA

Koppers021335

TABLE 1
Analytical Results
for the
Koppers Facility in Portland, Oregon
Clayton Project No.: 65-06003.00
July 21, 2005

Sample Location	Chloroform		1,1,1-Trichloroethane		Carbon Tetrachloride		Benzene		1,2-Dichloroethane	
	ppbv	ug/m^3	ppbv	ug/m^3	ppbv	ug/m^3	ppbv	ug/m^3	ppbv	ug/m^3
Station 1: In Office Building in the main office area, near west wall, between the desks	0.28	1.4	ND	ND	0.12 J	0.75 J	0.69	2.2	ND	ND
Station 2: Outdoors, on roof of the Office Building, center, south side of HVAC unit	ND	ND	ND	ND	0.085 J	0.53 J	1.0	3.3	ND	ND
Station 3: In Control Room Building, in main room, west of west desk	ND	ND	ND	ND	0.084 J	0.53 J	1.0	3.4	ND	ND
Station 4: Outdoors, at grade, north of Pencil Pitch Storage Building, ~28 feet northeast of north corner of building	ND	ND	ND	ND	0.086 J	0.54 J	1.5	4.7	ND	ND
Station 5: Outdoors, at grade, north of the containment wall for the tank farm, ~65 feet west of tank	ND	ND	ND	ND	0086 J	0.54 J	0.25	0.8	ND	ND
Station 6: Outdoors, at grade, southeast of Guard Shack at the Gasco Site entrance, by fence	ND	ND	ND	ND	0.079 J	0.50 J	0.23	0.74	ND	ND
US EPA BASE	--	0.6 - 8.6	--	1.3 - 52		0.9 - 2.1	--	1.7 - 61	--	1.0 - 85
OR-OSHA 8-Hour TWA-PEL	--	--	3.5×10^5	1.9×10^6	1.0×10^4	--	1000	--	5.0×10^4	--
NIOSH 8-Hour TWA-REL	--	--	--	--	--	--	100	320	1000	4000
ACGIH 8-Hour TWA-TLV	1.0×10^4	--	3.5×10^5	--	5000	--	500	--	1.0×10^4	--
DEQ RBDM, Remediation of Petroleum-Contaminated Sites	--	--	--	9200	--	--	--	1.5	--	--
Portland Forest Heights Post Office (1999-2003)	--	--	--	--	--	--	< 0.1 - 1.6	< 0.3 - 5.1	--	--
Portland North Roselawn (1999-2003)	--	--	--	--	--	--	< 0.1 - 2.4	< 0.3 - 7.7	--	--

Sample Location	Trichloroethene		1,2-Dichloropropane		cis-1,3-Dichloropropene		Toluene		trans-1,3-Dichloropropene	
	ppbv	ug/m^3	ppbv	ug/m^3	ppbv	ug/m^3	ppbv	ug/m^3	ppbv	ug/m^3
Station 1: In Office Building in the main office area, near west wall, between the desks	ND	ND	ND	ND	ND	ND	37	140	ND	ND
Station 2: Outdoors, on roof of the Office Building, center, south side of HVAC unit	ND	ND	ND	ND	ND	ND	0.84	3.2	ND	ND
Station 3: In Control Room Building, in main room, west of west desk	ND	ND	ND	ND	ND	ND	0.76	2.9	ND	ND
Station 4: Outdoors, at grade, north of Pencil Pitch Storage Building, ~28 feet northeast of north corner of building	ND	ND	ND	ND	ND	ND	1.1	4.3	ND	ND
Station 5: Outdoors, at grade, north of the containment wall for the tank farm, ~65 feet west of tank	ND	ND	ND	ND	ND	ND	0.43	1.6	ND	ND
Station 6: Outdoors, at grade, southeast of Guard Shack at the Gasco Site entrance, by fence	ND	ND	ND	ND	ND	ND	0.44	1.7	ND	ND
US EPA BASE	--	0.9 - 90	--	--	--	--	--	3.8 - 390	--	--
OR-OSHA 8-Hour TWA-PEL	1.0×10^5	--	7.5×10^4	3.5×10^5	--	--	2.0×10^5	--	--	--
NIOSH 8-Hour TWA-REL	2.5×10^4*	--	--	--	--	--	1.0×10^5	3.75×10^5	--	--
ACGIH 8-Hour TWA-TLV	5.0×10^4	--	7.5×10^4	--	--	--	5.0×10^4	--	--	--
DEQ RBDM, Remediation of Petroleum-Contaminated Sites	--	0.10	--	--	--	--	--	1600	--	--
Portland Forest Heights Post Office (1999-2003)	< 0.1 - 0.12	--	--	--	--	--	< 0.1 - 7.7	--	--	--
Portland North Roselawn (1999-2003)	< 0.1 - 0.12	--	--	--	--	--	< 0.1 - 7.6	--	--	--

Notes:
ppbv: parts per billion-volume
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PEL: Permissible Exposure Limit
REL: Recommended Exposure Limit
TLV: Threshold Limit Value
DEQ: Oregon Department of Environmental Quality
RBDM: Risk-Based Decision Making
ND: Not Detected
J: Estimated value
E: Exceeds instrument calibration range
*: 10-hour TWA

Koppers021336

TABLE 1
Analytical Results
for the
Koppers Facility in Portland, Oregon
Clayton Project No.: 65-06003.00
July 21, 2005

Sample Location	1,1,2-Trichloroethane		Tetrachloroethene		1,2-Dibromoethane (EDB)		Chlorobenzene		Ethyl Benzene		m,p-Xylene		o-Xylene		Styrene		1,1,2,2-Tetrachloroethane		1,3,5-Trimethylbenzene	
	ppbv	ug/m^3	ppbv	ug/m^3	ppbv	ug/m^3	ppbv	ug/m^3	ppbv	ug/m^3	ppbv	ug/m^3	ppbv	ug/m^3	ppbv	ug/m^3	ppbv	ug/m^3	ppbv	ug/m^3
Station 1: In Office Building in the main office area, near west wall, between the desks	ND	ND	3.3	22	ND	ND	ND	ND	2.1	9.2	10	44	2.9	13	ND	ND	ND	ND	0.063 J	0.31 J
Station 2: Outdoors, on roof of the Office Building, center, south side of HVAC unit	ND	ND	ND	ND	ND	ND	ND	ND	0.18	0.79	0.40	1.8	0.14 J	0.61 J	ND	ND	ND	ND	ND	ND
Station 3: In Control Room Building, in main room, west of west desk	ND	ND	ND	ND	ND	ND	ND	ND	0.12 J	0.54 J	0.40	1.7	0.14 J	0.60 J	0.70	3.0	ND	ND	ND	ND
Station 4: Outdoors, at grade, north of Pencil Pitch Storage Building, ~28 feet northeast of north corner of building	ND	ND	ND	ND	ND	ND	ND	ND	0.18	0.79	0.61	2.6	0.22	0.95	ND	ND	ND	ND	ND	ND
Station 5: Outdoors, at grade, north of the containment wall for the tank farm, ~65 feet west of tank	ND	ND	ND	ND	ND	ND	ND	ND	0.075 J	0.32 J	0.26	1.1	0.076 J	0.33 J	ND	ND	ND	ND	ND	ND
Station 6: Outdoors, at grade, southeast of Guard Shack at the Gasco Site entrance, by fence	ND	ND	ND	ND	ND	ND	ND	ND	0.086 J	0.37 J	0.32	1.4	0.097 J	0.42 J	ND	ND	ND	ND	ND	ND
US EPA BASE	--	--	--	0.7 - 56	--	1.5	--	1.1 - 1.4	--	1.2 - 20	--	4.0 - 69	--	1.1 - 15	--	0.6 - 40	--	--	--	1.2 - 11
OR-OSHA 8-Hour TWA-PEL	1.0×10^4	4.5×10^4	1.0×10^5	--	2.0×10^4	--	7.5×10^4	3.5×10^5	1.0×10^5	4.35×10^5	1.0×10^5	4.35×10^5	1.0×10^5	4.35×10^5	1.0×10^5	--	5000	3.5×10^4	--	--
NIOSH 8-Hour TWA-REL	1.0×10^4	4.5×10^4	--	--	45	--	--	--	1.0×10^5	4.35×10^5	1.0×10^5	4.35×10^5	1.0×10^5	4.35×10^5	5.0×10^4	2.15×10^5	1000	7000	2.5×10^4	1.25×10^5
ACGIH 8-Hour TWA-TLV	1.0×10^4	--	2.5×10^4	--	--	--	1.0×10^4	--	1.0×10^5	--	1.0×10^5	--	1.0×10^5	--	2.0×10^4	--	1000	--	--	--
DEQ RBDM, Remediation of Petroleum-Contaminated Sites	--	--	--	1.9	--	0.053	--	--	--	4,200	--	420	--	420	--	--	--	--	--	25
Portland Forest Heights Post Office (1999-2003)	--	--	--	--	--	--	--	--	< 0.1 - 1.6	--	< 0.1 - 6.5	--	< 0.1 - 2.0	--	--	--	< 0.1 - 4.7	--	--	--
Portland North Roselawn (1999-2003)	--	--	--	--	--	--	--	--	< 0.1 - 1.8	--	< 0.1 - 7.7	--	< 0.1 - 2.9	--	--	--	< 0.1 - 1.2	--	--	--

Notes:
ppbv: parts per billion-volume
ug/m^3: micrograms per cubic meter
US EPA: United States Environmental Protection Agency
BASE: Building Assessment and Survey Evaluation
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TWA: Time-Weighted Average
PEL: Permissible Exposure Limit
REL: Recommended Exposure Limit
TLV: Threshold Limit Value
DEQ: Oregon Department of Environmental Quality
RBDM: Risk-Based Decision Making
ND: Not Detected
J: Estimated value
E: Exceeds instrument calibration range
*: 10-hour TWA

Koppers021337

TABLE 1
Analytical Results
for the
Koppers Facility in Portland, Oregon
Clayton Project No.: 65-06003.00
July 21, 2005

Sample Location	1,2,4-Trimethylbenzene		1,3-Dichlorobenzene		1,4-Dichlorobenzene		alpha-Chlorotoluene		1,2-Dichlorobenzene		Methylene Chloride		1,2,4-Trichlorobenzene		Hexachlorobutadiene		1,3-Butadiene		Acetone	
	ppbv	ug/m^3	ppbv	ug/m^3	ppbv	ug/m^3	ppbv	ug/m^3	ppbv	ug/m^3	ppbv	ug/m^3	ppbv	ug/m^3	ppbv	ug/m^3	ppbv	ug/m^3	ppbv	ug/m^3
Station 1: In Office Building in the main office area, near west wall, between the desks	0.16 J	0.79 J	ND	ND	ND	ND	ND	ND	ND	ND	0.20 J	0.71 J	ND	ND	ND	ND	ND	ND	14	32
Station 2: Outdoors, on roof of the Office Building, center, south side of HVAC unit	0.12 J	0.56 J	ND	ND	0.040 J	0.24 J	ND	ND	ND	ND	0.18 J	0.64 J	0.080 J	0.59 J	ND	ND	ND	ND	8.3	20
Station 3: In Control Room Building, in main room, west of west desk	0.10 J	0.50 J	ND	ND	ND	ND	ND	ND	ND	ND	0.16 J	0.56 J	ND	ND	ND	ND	ND	ND	7.6	18
Station 4: Outdoors, at grade, north of Pencil Pitch Storage Building, ~28 feet northeast of north corner of building	0.15 J	0.72 J	ND	ND	ND	ND	ND	ND	ND	ND	0.17 J	0.60 J	ND	ND	ND	ND	ND	ND	8.0	19
Station 5: Outdoors, at grade, north of the containment wall for the tank farm, ~65 feet west of tank	0.060 J	0.29 J	ND	ND	ND	ND	ND	ND	ND	ND	0.16 J	0.56 J	ND	ND	ND	ND	ND	ND	9.3	22
Station 6: Outdoors, at grade, southeast of Guard Shack at the Gasco Site entrance, by fence	0.065 J	0.32 J	ND	ND	ND	ND	ND	ND	ND	ND	0.16 J	0.56 J	ND	ND	ND	ND	ND	ND	2.8	6.7
US EPA BASE	--	1.2 - 93	--	--	--	1.2 - 46	--	--	--	1.7	--	1.7 - 29	--	--	--	--	--	--	--	12 - 240
OR-OSHA 8-Hour TWA-PEL	--	--	--	--	$7.5x10^4$	$4.5x10^5$	1000	5000	--	--	$2.5x10^4$	--	--	--	--	--	1000	2210	$1.0x10^6$	$2.4x10^6$
NIOSH 8-Hour TWA-REL	$2.5x10^4$	$1.25x10^5$	--	--	--	--	--	--	--	--	--	--	--	--	20	240	--	--	$2.5x10^5$	$5.9x10^5$
ACGIH 8-Hour TWA-TLV	--	--	--	--	$1.0x10^4$	--	1000	--	$2.5x10^4$	--	$5.0x10^4$	--	--	--	20	--	2000	--	$5.0x10^5$	--
DEQ RBDM, Remediation of Petroleum-Contaminated Sites	--	25	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Portland Forest Heights Post Office (1999-2003)	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Portland North Roselawn (1999-2003)	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--

Notes:
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DEQ: Oregon Department of Environmental Quality
RBDM: Risk-Based Decision Making
ND: Not Detected
J: Estimated value
E: Exceeds instrument calibration range
*: 10-hour TWA

Koppers021338

TABLE 1
Analytical Results
for the
Koppers Facility in Portland, Oregon
Clayton Project No.: 65-06003.00
July 21, 2005

Sample Location	Carbon Disulfide		2-Propanol		trans-1,2-Dichloroethene		2-Butanone (Methyl Ethyl Ketone)		Hexane		Tetrahydrofuran		Cyclohexane		1,4-Dioxane		Bromodichloromethane		4-Methyl-2-pentanone		2-Hexanone	
	ppbv	ug/m³	ppbv	ug/m³	ppbv	ug/m³	ppbv	ug/m³	ppbv	ug/m³	ppbv	ug/m³	ppbv	ug/m³	ppbv	ug/m³	ppbv	ug/m³	ppbv	ug/m³	ppbv	ug/m³
Station 1: In Office Building in the main office area, near west wall, between the desks	4.8	15	1.4	3.3	ND	ND	0.51 J	1.5 J	0.43 J	1.5 J	0.14 J	0.42 J	0.16 J	0.53 J	ND	ND	ND	ND	0.094 J	0.38 J	ND	ND
Station 2: Outdoors, on roof of the Office Building, center, south side of HVAC unit	1.3	4.0	1.1	2.8	ND	ND	2.0	5.9	0.29 J	1.0 J	0.31 J	0.92 J	ND	ND	ND	ND	ND	ND	0.079 J	0.32 J	0.083 J	0.34 J
Station 3: In Control Room Building, in main room, west of west desk	0.10 J	0.33 J	140 E	330 E	ND	ND	0.67 J	2.0 J	0.30 J	1.0 J	0.16 J	0.48 J	0.11 J	0.36 J	ND	ND	ND	ND	0.052 J	0.21 J	ND	ND
Station 4: Outdoors, at grade, north of Pencil Pitch Storage Building, ~28 feet northeast of north corner of building	0.11 J	0.33 J	1.7	4.1	ND	ND	0.99	2.9	0.36 J	1.3 J	0.13 J	0.40 J	0.18 J	0.61 J	ND	ND	ND	ND	0.058 J	0.24 J	0.081 J	0.33 J
Station 5: Outdoors, at grade, north of the containment wall for the tank farm, ~65 feet west of tank	0.12 J	0.38 J	0.68 J	1.7 J	ND	ND	1.4	4.0	0.94	3.3	0.094 J	0.28 J	0.23 J	0.78 J	ND	ND	ND	ND	0.053 J	0.22 J	0.095 J	0.39 J
Station 6: Outdoors, at grade, southeast of Guard Shack at the Gasco Site entrance, by fence	0.18 J	0.56 J	0.46 J	1.1 J	ND	ND	0.26 J	0.78 J	0.20 J	0.69 J	0.11 J	0.31 J	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
US EPA BASE	--	0.8 - 15	--	3.7 - 570	--	--	--	1.4 - 28	--	1.6 - 130	--	--	--	--	--	--	--	--	--	1.6 - 73	--	--
OR-OSHA 8-Hour TWA-PEL	$2.0x10^4$	--	$4.0x10^5$	$9.8x10^5$	--	--	$2.0x10^5$	$5.9x10^5$	$5.0x10^5$	$1.8x10^6$	$2.0x10^5$	$5.9x10^5$	$3.0x10^5$	$1.05x10^6$	$1.0x10^5$	$3.6x10^5$	--	--	$1.0x10^5$	$4.1x10^5$	$1.0x10^5$	$4.1x10^5$
NIOSH 8-Hour TWA-REL	--	--	$4.0x10^5$	$9.8x10^5$	--	--	$2.0x10^5$	$5.9x10^5$	$5.0x10^4$	$1.8x10^5$	$2.0x10^5$	$5.9x10^5$	$3.0x10^5$	$1.05x10^6$	--	--	--	--	$5.0x10^4$	$2.05x10^5$	$5.0x10^4$	$2.05x10^5$
ACGIH 8-Hour TWA-TLV	$1.0x10^4$	--	$2.0x10^5$	--	--	--	$2.0x10^5$	--	$5.0x10^4$	--	$5.0x10^4$	--	$1.0x10^5$	--	$2.0x10^4$	--	--	--	$5.0x10^4$	--	5000	--
DEQ RBDM, Remediation of Petroleum-Contaminated Sites	--	--	--	--	--	290	--	--	--	--	--	--	--	--	--	3.7	--	--	--	--	--	--
Portland Forest Heights Post Office (1999-2003)	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Portland North Roselawn (1999-2003)	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--

Notes:
ppbv: parts per billion-volume
ug/m³: micrograms per cubic meter
US EPA: United States Environmental Protection Agency
BASE: Building Assessment and Survey Evaluation
OR-OSHA: Oregon Occupational Safety & Health Administration
NIOSH: National Institute for Occupational Safety & Health
ACGIH: American Conference of Governmental Industrial Hygienists
TWA: Time-Weighted Average
PEL: Permissible Exposure Limit
REL: Recommended Exposure Limit
TLV: Threshold Limit Value
DEQ: Oregon Department of Environmental Quality
RBDM: Risk-Based Decision Making
ND: Not Detected
J: Estimated value
E: Exceeds instrument calibration range
*: 10-hour TWA

Koppers021339

TABLE 1
Analytical Results
for the
Koppers Facility in Portland, Oregon
Clayton Project No.: 65-06003.00
July 21, 2005

Sample Location	Dibromochloro methane		Bromoform		4-Ethyltoluene		Ethanol		Methyl tert-butyl ether		Heptane		Cumene		Propylbenzene		Naphthalene	
	ppbv	ug/m^3	ppbv	ug/m^3	ppbv	ug/m^3	ppbv	ug/m^3	ppbv	ug/m^3	ppbv	ug/m^3	ppbv	ug/m^3	ppbv	ug/m^3	ppbv	ug/m^3
Station 1: In Office Building in the main office area, near west wall, between the desks	ND	ND	ND	ND	0.20 J	1.0 J	18	34	ND	ND	0.73 J	3.0 J	0.054 J	0.26 J	0.036 J	0.18 J	7.4	39
Station 2: Outdoors, on roof of the Office Building, center, south side of HVAC unit	ND	ND	ND	ND	0.15 J	0.75 J	3.2	5.9	ND	ND	0.60 J	2.5 J	ND	ND	00.37 J	0.18 J	7.8	41
Station 3: In Control Room Building, in main room, west of west desk	ND	ND	ND	ND	0.10 J	0.51 J	7.5	14	ND	ND	0.25 J	1.0 J	ND	ND	ND	ND	1.8	9.4
Station 4: Outdoors, at grade, north of Pencil Pitch Storage Building, ~28 feet northeast of north corner of building	ND	ND	ND	ND	0.17 J	0.84 J	2.9	5.5	ND	ND	0.36 J	1.5 J	ND	ND	0.044 J	0.22 J	0.37 J	1.9 J
Station 5: Outdoors, at grade, north of the containment wall for the tank farm, ~65 feet west of tank	ND	ND	ND	ND	0.070 J	0.34 J	4.3	8.1	ND	ND	0.44 J	1.8 J	ND	ND	ND	ND	ND	ND
Station 6: Outdoors, at grade, southeast of Guard Shack at the Gasco Site entrance, by fence	ND	ND	ND	ND	0.067 J	0.33 J	2.9	5.5	ND	ND	0.086 J	0.35 J	ND	ND	ND	ND	ND	ND
US EPA BASE	--	--	--	--	--	1.2 - 11	--	1.5 - 300	--	2.6 - 19	--	2.1 - 36	--	--	--	--	--	2.2 - 410
OR-OSHA 8-Hour TWA-PEL	--	--	500	5000	--	--	$1.0x10^6$	$1.9x10^6$	--	--	$5.0x10^5$	$2.0x10^6$	$5.0x10^4$	$2.45x10^5$	--	--	$1.0x10^4$	$5.0x10^4$
NIOSH 8-Hour TWA-REL	--	--	500	5000	--	--	$1.0x10^6$	$1.9x10^6$	--	--	$8.5x10^4$	$3.5x10^5$	$5.0x10^4$	$2.45x10^5$	--	--	$1.0x10^4$	$5.0x10^4$
ACGIH 8-Hour TWA-TLV	--	--	500	--	--	--	$1.0x10^6$	--	$5.0x10^4$	--	$4.0x10^5$	--	$5.0x10^4$	--	--	--	$1.0x10^4$	--
DEQ RBDM, Remediation of Petroleum-Contaminated Sites	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	580	--	13
Portland Forest Heights Post Office (1999-2003)	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	< 0.0003 - 0.0086
Portland North Roselawn (1999-2003)	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	< 0.0003 - 0.0125

Notes:
ppbv: parts per billion-volume
ug/m^3: micrograms per cubic meter
US EPA: United States Environmental Protection Agency
BASE: Building Assessment and Survey Evaluation
OR-OSHA: Oregon Occupational Safety & Health Administration
NIOSH: National Institute for Occupational Safety & Health
ACGIH: American Conference of Governmental Industrial Hygienists
TWA: Time-Weighted Average
PEL: Permissible Exposure Limit
REL: Recommended Exposure Limit
TLV: Threshold Limit Value
DEQ: Oregon Department of Environmental Quality
RBDM: Risk-Based Decision Making
ND: Not Detected
J: Estimated value
E: Exceeds instrument calibration range
*: 10-hour TWA

Koppers021340

Clayton GROUP SERVICES

Table 2
Sample Conditions at Koppers Inc. Site
Clayton Project No. 65-06003.00
July 21, 2005

Station	Location	Time On (AM)	Summa Vacuum (" Hg)	Time Off (PM)	Summa Vacuum (" Hg)	Ambient Conditions
1	Office Building, in the main office area, near west wall, between the desks	5:58	29.5	1:58	7.0	At 9:40 am, 72.6 °F, 29.87 " Hg. Neutral pressure to outside, air handler only recirculates air.
2	Outdoors, on roof of the Office Building, center, south side of HVAC unit	6:01	27.8	2:01	6.7	At 9:43 am, 79.8 °F, 29.87 " Hg. Wind from the north-northwest, calm to 6.2 mph.
3	Control Room Building, in main room, west of west desk	6:05	29.5	2:07	6.0	At 9:57 am, 75.7 °F, 29.88 " Hg. Neutral pressure to outside, two recirculating window air conditioners operating.
4	Outdoors, at grade, North of Pencil Pitch Storage Building. ~28 foot northeast of north corner of building.	6:11	29.7	2:13	6.2	At 10:07 am, 78.9 °F, 29.88 " Hg. Wind from the northwest: calm to 7.8 mph.
5	Outdoors, at grade, North of the containment wall for that tank farm, ~ 65 foot west of tank.	6:19	30.0	2:19	6.8	At 10:18 am, 80.2 °F, 29.88 " Hg. Wind from the north to northwest, calm to 4.5 mph.
6	Outdoors, at grade, southeast of Guard Shack at the Gasco Site entrance, by fence.	6:32	28.2	2:32	4.8	At 10:50 am, 80.7 °F, 29.87 " Hg. Wind from the northwest, calm to 7.1 mph.

Notes:
" Hg: inches of mercury pressure
°F: degrees Fahrenheit
mph: miles per hour, wind speed

Clayton
GROUP SERVICES

APPENDIX

LABORATORY DATA SHEETS

AIR TOXICS LTD.

AN ENVIRONMENTAL ANALYTICAL LABORATORY

Air Toxics Ltd. Introduces the Electronic Report

Thank you for choosing Air Toxics Ltd. To better serve our customers, we are providing your report by e-mail. This document is provided in Portable Document Format which can be viewed with Acrobat Reader by Adobe.

This electronic report includes the following:

- Work order Summary;
- Laboratory Narrative;
- Results; and
- Chain of Custody (copy).

180 BLUE RAVINE ROAD, SUITE B FOLSOM, CA - 95630

(916) 985-1000 .FAX (916) 985-1020

Hours 8:00 A.M to 6:00 P.M. Pacific

AIR TOXICS LTD.

AN ENVIRONMENTAL ANALYTICAL LABORATORY

WORK ORDER #: 0507550R1

Work Order Summary

CLIENT:	Mr. Scott Turkle Clayton Group Services 1500 NE Irving Street Suite 440 Portland, OR 97232	**BILL TO:**	Mr. Scott Turkle Clayton Group Services 1500 NE Irving Street Suite 440 Portland, OR 97232
PHONE:	971-244-1205	**P.O. #**	
FAX:	971-244-1209	**PROJECT #**	65-06003.00 Hahn- Koppers
DATE RECEIVED:	07/25/2005	**CONTACT:**	Nicole Salengo
DATE COMPLETED:	08/05/2005		
DATE REISSUED:	8/11/05		

FRACTION #	NAME	TEST	RECEIPT VAC./PRES.
01A	#12335, Station 1, Office Bldg.	Modified TO-15	7.0 "Hg
02A	#25270, Station 2, Outdoors, Roof of Office	Modified TO-15	8.0 "Hg
03A	#33678, Station 3, Control Room Bldg. Main Roo	Modified TO-15	5.5 "Hg
04A	#33975, Station 4, Outdoors, North of Pencil Pitc	Modified TO-15	6.5 "Hg
04AA	#33975, Station 4, Outdoors, North of Pencil Du	Modified TO-15	6.5 "Hg
05A	#34442, Station 5, Outdoors, North of tanks	Modified TO-15	7.5 "Hg
06A	#94191, Station 6, Outdoors, by Gasco Guard Sh	Modified TO-15	6.5 "Hg
07A	Lab Blank	Modified TO-15	NA
07B	Lab Blank	Modified TO-15	NA
08A	CCV	Modified TO-15	NA
08B	CCV	Modified TO-15	NA
09A	LCS	Modified TO-15	NA
09B	LCS	Modified TO-15	NA

CERTIFIED BY: Linda L. Freeman DATE: 08/11/05

Laboratory Director

Certfication numbers: AR DEQ - 03-084-0, CA NELAP - 02110CA, LA NELAP/LELAP- AI 30763, NJ NELAP - CA004
NY NELAP - 11291, UT NELAP - 9166389892
Name of Accrediting Agency: NELAP/Florida Department of Health, Scope of Application: Clean Air Act,
Accreditation number: E87680, Effective date: 07/01/04, Expiration date: 06/30/05
Air Toxics Ltd. certifies that the test results contained in this report meet all requirements of the NELAC standards

This report shall not be reproduced, except in full, without the written approval of Air Toxics Ltd.

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(916) 985-1000 . (800) 985-5955 . FAX (916) 985-1020

LABORATORY NARRATIVE
Modified TO-15
Clayton Group Services
Workorder# 0507550R1

Six 6 Liter Summa Special (100% Certified) samples were received on July 25, 2005. The laboratory performed analysis via modified EPA Method TO-15 using GC/MS in the full scan mode. The method involves concentrating up to 1.0 liter of air. The concentrated aliquot is then flash vaporized and swept through a water management system to remove water vapor. Following dehumidification, the sample passes directly into the GC/MS for analysis.

Method modifications taken to run these samples include:

Requirement	*TO-15*	*ATL Modifications*
Blank and standards	Zero air	Nitrogen
Dilutions for initial calibration	Dynamic dilutions or static using canisters.	Syringe dilutions may also be utilized.
BFB acceptance criteria	CLP protocol	SW-846 protocol
Daily Calibration	+- 30% Difference	</= 30% Difference with four allowed out up to </=40%.; flag and narrate outliers
ICAL %RSD acceptance criteria	+- 30% RSD with 2 compounds allowed out to < 40% RSD	30% RSD with 4 compounds allowed out to < 40% RSD
Sample collection media	Summa canister	ATL recommends use of summa canisters to insure data defensibility, but will report results from Tedlar bags at client request

Receiving Notes

The Chain of Custody (COC) information for samples #12335, Station 1, Office Bldg., #25270, Station 2, Outdoors, Roof of Office, #33678, Station 3, Control Room Bldg., #33975, Station 4, Outdoors, North of Pencil Pitch, #34442, Station 5, Outdoors, North of tanks and #94191, Station 6, Outdoors, by Gasco Guard Shack did not match the entries on the sample tags with regard to sample identification. The discrepancy was noted in the Sample Receipt Confirmation email/fax and the information on the COC was used to process and report the samples.

Analytical Notes

As per project specific client request the laboratory has reported estimated values for target compound hits that are below the Reporting Limit but greater than the Method Detection Limit. Concentrations that are below the level at which the canister was certified (at the Reporting Limit) may be false positives.

The reported CCV for each daily batch may be derived from more than one individual analytical file due to the client's request for non-standard compounds.

Non-standard compounds may have different acceptance criteria than the standard TO-14A/TO-15 compound list as per contract or verbal agreement.

THE WORKORDER WAS REISSUED ON AUGUST 11, 2005 TO REPORT THE CORRECT ANALYTICAL RUN AND ASSOCIATED RESULTS FOR THE DUPLICATE ANALYSIS OF SAMPLE #33975, STATION 4, OUTDOORS, NORTH OF PENCIL PITC D.

ALSO IN THIS REISSUE, POSITIVE RESULTS FOR COMPOUNDS 2-BUTANONE AND 4-METHYL-2-PENTANONE WERE REMOVED FROM LABORATORY BLANK 07A. THESE COMPOUNDS HAD PREVIOUSLY BEEN REPORTED BELOW THE REPORTING LIMIT BUT ABOVE THE METHOD DETECTION LIMIT. THE DETECTIONS WERE REMOVED BECAUSE, FOR BOTH COMPOUNDS, AN INCORRECT PEAK HAD BEEN SELECTED. THE ACTUAL RESULT FOR BOTH OF THESE COMPOUNDS WAS BELOW THE MDL.

Definition of Data Qualifying Flags

Seven qualifiers may have been used on the data analysis sheets and indicates as follows:

B - Compound present in laboratory blank greater than reporting limit (background subtraction not performed).

J - Estimated value.

E - Exceeds instrument calibration range.

S - Saturated peak.

Q - Exceeds quality control limits.

U - Compound analyzed for but not detected above the reporting limit

UJ- Non-detected compound associated with low bias in the CCV

N - The identification is based on presumptive evidence.

File extensions may have been used on the data analysis sheets and indicates as follows:

a-File was requantified

b-File was quantified by a second column and detector

r1-File was requantified for the purpose of reissue

Client Sample ID: #25270, Station 2, Outdoors, Roof of Office

Lab ID#: 0507550R1-02A

Ethyl Benzene	0.18	0.18	0.79	0.79
m,p-Xylene	0.18	0.40	0.79	1.8
o-Xylene	0.18	0.14 J	0.79	0.61 J
1,2,4-Trimethylbenzene	0.18	0.12 J	0.90	0.56 J
1,4-Dichlorobenzene	0.18	0.040 J	1.1	0.24 J
Methylene Chloride	0.37	0.18 J	1.3	0.64 J
1,2,4-Trichlorobenzene	0.92	0.080 J	6.8	0.59 J
Acetone	0.92	8.3	2.2	20
Carbon Disulfide	0.92	1.3	2.8	4.0
2-Propanol	0.92	1.1	2.2	2.8
2-Butanone (Methyl Ethyl Ketone)	0.92	2.0	2.7	5.9
Hexane	0.92	0.29 J	3.2	1.0 J
Tetrahydrofuran	0.92	0.31 J	2.7	0.92 J
4-Methyl-2-pentanone	0.92	0.079 J	3.7	0.32 J
2-Hexanone	0.92	0.083 J	3.7	0.34 J
4-Ethyltoluene	0.92	0.15 J	4.5	0.75 J
Ethanol	0.92	3.2	1.7	5.9
Heptane	0.92	0.60 J	3.7	2.5 J
Propylbenzene	0.92	0.037 J	4.5	0.18 J
Naphthalene	0.92	7.8	4.8	41

Client Sample ID: #33678, Station 3, Control Room Bldg. Main Room

Lab ID#: 0507550R1-03A

Compound	Rpt. Limit (ppbv)	Amount (ppbv)	Rpt. Limit (uG/m3)	Amount (uG/m3)
Freon 12	0.16	0.46	0.81	2.3
Chloromethane	0.16	0.48	0.34	1.0
Freon 11	0.16	0.27	0.92	1.5
Carbon Tetrachloride	0.16	0.084 J	1.0	0.53 J
Benzene	0.16	1.0	0.52	3.4
Toluene	0.16	0.76	0.62	2.9
Ethyl Benzene	0.16	0.12 J	0.71	0.54 J
m,p-Xylene	0.16	0.40	0.71	1.7
o-Xylene	0.16	0.14 J	0.71	0.60 J
Styrene	0.16	0.70	0.70	3.0
1,2,4-Trimethylbenzene	0.16	0.10 J	0.81	0.50 J
Methylene Chloride	0.33	0.16 J	1.1	0.56 J
Acetone	0.82	7.6	1.9	18
Carbon Disulfide	0.82	0.10 J	2.6	0.33 J
2-Propanol	0.82	140 E	2.0	330 E
2-Butanone (Methyl Ethyl Ketone)	0.82	0.67 J	2.4	2.0 J
Hexane	0.82	0.30 J	2.9	1.0 J
Tetrahydrofuran	0.82	0.16 J	2.4	0.48 J
Cyclohexane	0.82	0.11 J	2.8	0.36 J
4-Methyl-2-pentanone	0.82	0.052 J	3.4	0.21 J
4-Ethyltoluene	0.82	0.10 J	4.0	0.51 J
Ethanol	0.82	7.5	1.5	14
Heptane	0.82	0.25 J	3.4	1.0 J

[redacted]

Client Sample ID: #33678, Station 3, Control Room Bldg. Main Room

Lab ID#: 0507550R1-03A

Naphthalene	0.82	1.8	4.3	9.4

Client Sample ID: #33975, Station 4, Outdoors, North of Pencil Pitc

Lab ID#: 0507550R1-04A

Compound	Rpt. Limit (ppbv)	Amount (ppbv)	Rpt. Limit (uG/m3)	Amount (uG/m3)
Freon 12	0.17	0.47	0.84	2.3
Chloromethane	0.17	0.50	0.35	1.0
Freon 11	0.17	0.27	0.96	1.5
Carbon Tetrachloride	0.17	0.086 J	1.1	0.54 J
Benzene	0.17	1.5	0.55	4.7
Toluene	0.17	1.1	0.64	4.3
Ethyl Benzene	0.17	0.18	0.74	0.79
m,p-Xylene	0.17	0.61	0.74	2.6
o-Xylene	0.17	0.22	0.74	0.95
1,2,4-Trimethylbenzene	0.17	0.15 J	0.84	0.72 J
Methylene Chloride	0.34	0.17 J	1.2	0.60 J
Acetone	0.86	8.0	2.0	19
Carbon Disulfide	0.86	0.11 J	2.7	0.33 J
2-Propanol	0.86	1.7	2.1	4.1
2-Butanone (Methyl Ethyl Ketone)	0.86	0.99	2.5	2.9
Hexane	0.86	0.36 J	3.0	1.3 J
Tetrahydrofuran	0.86	0.13 J	2.5	0.40 J
Cyclohexane	0.86	0.18 J	2.9	0.61 J
4-Methyl-2-pentanone	0.86	0.058 J	3.5	0.24 J
2-Hexanone	0.86	0.081 J	3.5	0.33 J
4-Ethyltoluene	0.86	0.17 J	4.2	0.84 J
Ethanol	0.86	2.9	1.6	5.5
Heptane	0.86	0.36 J	3.5	1.5 J
Propylbenzene	0.86	0.044 J	4.2	0.22 J
Naphthalene	0.86	0.37 J	4.5	1.9 J

Client Sample ID: #33975, Station 4, Outdoors, North of Pencil Dup

Lab ID#: 0507550R1-04AA

Compound	Rpt. Limit (ppbv)	Amount (ppbv)	Rpt. Limit (uG/m3)	Amount (uG/m3)
Freon 12	0.17	0.51	0.84	2.5
Chloromethane	0.17	0.50	0.35	1.0
Freon 11	0.17	0.26	0.96	1.5
Carbon Tetrachloride	0.17	0.086 J	1.1	0.54 J
Benzene	0.17	1.4	0.55	4.6
Toluene	0.17	1.2	0.64	4.4
Ethyl Benzene	0.17	0.17	0.74	0.76
m,p-Xylene	0.17	0.57	0.74	2.5
o-Xylene	0.17	0.20	0.74	0.88
1,2,4-Trimethylbenzene	0.17	0.16 J	0.84	0.77 J
Methylene Chloride	0.34	0.18 J	1.2	0.63 J

Client Sample ID: #33975, Station 4, Outdoors, North of Pencil Dup

Lab ID#: 0507550R1-04AA

Acetone	0.86	8.2	2.0	19
Carbon Disulfide	0.86	0.11 J	2.7	0.35 J
2-Propanol	0.86	1.4	2.1	3.6
2-Butanone (Methyl Ethyl Ketone)	0.86	0.94	2.5	2.8
Hexane	0.86	0.34 J	3.0	1.2 J
Tetrahydrofuran	0.86	0.13 J	2.5	0.37 J
Cyclohexane	0.86	0.19 J	2.9	0.66 J
4-Methyl-2-pentanone	0.86	0.070 J	3.5	0.29 J
2-Hexanone	0.86	0.070 J	3.5	0.29 J
4-Ethyltoluene	0.86	0.16 J	4.2	0.82 J
Ethanol	0.86	2.8	1.6	5.2
Heptane	0.86	0.35 J	3.5	1.4 J
Propylbenzene	0.86	0.041 J	4.2	0.20 J

Client Sample ID: #34442, Station 5, Outdoors, North of tanks

Lab ID#: 0507550R1-05A

Compound	Rpt. Limit (ppbv)	Amount (ppbv)	Rpt. Limit (uG/m3)	Amount (uG/m3)
Freon 12	0.18	0.51	0.88	2.5
Chloromethane	0.18	0.49	0.37	1.0
Freon 11	0.18	0.28	1.0	1.6
Carbon Tetrachloride	0.18	0.086 J	1.1	0.54 J
Benzene	0.18	0.25	0.57	0.80
Toluene	0.18	0.43	0.67	1.6
Ethyl Benzene	0.18	0.075 J	0.78	0.32 J
m,p-Xylene	0.18	0.26	0.78	1.1
o-Xylene	0.18	0.076 J	0.78	0.33 J
1,2,4-Trimethylbenzene	0.18	0.060 J	0.88	0.29 J
Methylene Chloride	0.36	0.16 J	1.2	0.56 J
Acetone	0.90	9.3	2.1	22
Carbon Disulfide	0.90	0.12 J	2.8	0.38 J
2-Propanol	0.90	0.68 J	2.2	1.7 J
2-Butanone (Methyl Ethyl Ketone)	0.90	1.4	2.6	4.0
Hexane	0.90	0.94	3.2	3.3
Tetrahydrofuran	0.90	0.094 J	2.6	0.28 J
Cyclohexane	0.90	0.23 J	3.1	0.78 J
4-Methyl-2-pentanone	0.90	0.053 J	3.7	0.22 J
2-Hexanone	0.90	0.095 J	3.7	0.39 J
4-Ethyltoluene	0.90	0.070 J	4.4	0.34 J
Ethanol	0.90	4.3	1.7	8.1
Heptane	0.90	0.44 J	3.7	1.8 J

Client Sample ID: #94191, Station 6, Outdoors, by Gasco Guard Shack

Lab ID#: 0507550R1-06A

Compound	Rpt. Limit (ppbv)	Amount (ppbv)	Rpt. Limit (uG/m3)	Amount (uG/m3)
Freon 12	0.17	0.48	0.84	2.4

Client Sample ID: #94191, Station 6, Outdoors, by Gasco Guard Shack

Lab ID#: 0507550R1-06A

Chloromethane	0.17	0.46	0.35	0.94
Freon 11	0.17	0.27	0.96	1.5
Carbon Tetrachloride	0.17	0.079 J	1.1	0.50 J
Benzene	0.17	0.23	0.55	0.74
Toluene	0.17	0.44	0.64	1.7
Ethyl Benzene	0.17	0.086 J	0.74	0.37 J
m,p-Xylene	0.17	0.32	0.74	1.4
o-Xylene	0.17	0.097 J	0.74	0.42 J
1,2,4-Trimethylbenzene	0.17	0.065 J	0.84	0.32 J
Methylene Chloride	0.34	0.16 J	1.2	0.56 J
Acetone	0.86	2.8	2.0	6.7
Carbon Disulfide	0.86	0.18 J	2.7	0.56 J
2-Propanol	0.86	0.46 J	2.1	1.1 J
2-Butanone (Methyl Ethyl Ketone)	0.86	0.26 J	2.5	0.78 J
Hexane	0.86	0.20 J	3.0	0.69 J
Tetrahydrofuran	0.86	0.11 J	2.5	0.31 J
4-Ethyltoluene	0.86	0.067 J	4.2	0.33 J
Ethanol	0.86	2.9	1.6	5.5
Heptane	0.86	0.086 J	3.5	0.35 J

AIR TOXICS LTD.

Client Sample ID: #12335, Station 1, Office Bldg.

Lab ID#: 0507550R1-01A

MODIFIED EPA METHOD TO-15 GC/MS FULL SCAN

File Name:	7080209	Date of Collection: 7/21/05
Dil. Factor:	1.75	Date of Analysis: 8/2/05 10:55 PM

Compound	Rpt. Limit (ppbv)	Amount (ppbv)	Rpt. Limit (uG/m3)	Amount (uG/m3)
Freon 12	0.18	0.36	0.86	1.8
Freon 114	0.18	Not Detected	1.2	Not Detected
Chloromethane	0.18	0.52	0.36	1.1
Vinyl Chloride	0.18	Not Detected	0.45	Not Detected
Bromomethane	0.18	Not Detected	0.68	Not Detected
Chloroethane	0.18	Not Detected	0.46	Not Detected
Freon 11	0.18	0.39	0.98	2.2
1,1-Dichloroethene	0.18	Not Detected	0.69	Not Detected
Freon 113	0.18	Not Detected	1.3	Not Detected
1,1-Dichloroethane	0.18	Not Detected	0.71	Not Detected
cis-1,2-Dichloroethene	0.18	Not Detected	0.69	Not Detected
Chloroform	0.18	0.28	0.85	1.4
1,1,1-Trichloroethane	0.18	Not Detected	0.95	Not Detected
Carbon Tetrachloride	0.18	0.12 J	1.1	0.75 J
Benzene	0.18	0.69	0.56	2.2
1,2-Dichloroethane	0.18	Not Detected	0.71	Not Detected
Trichloroethene	0.18	Not Detected	0.94	Not Detected
1,2-Dichloropropane	0.18	Not Detected	0.81	Not Detected
cis-1,3-Dichloropropene	0.18	Not Detected	0.79	Not Detected
Toluene	0.18	37	0.66	140
trans-1,3-Dichloropropene	0.18	Not Detected	0.79	Not Detected
1,1,2-Trichloroethane	0.18	Not Detected	0.95	Not Detected
Tetrachloroethene	0.18	3.3	1.2	22
1,2-Dibromoethane (EDB)	0.18	Not Detected	1.3	Not Detected
Chlorobenzene	0.18	Not Detected	0.80	Not Detected
Ethyl Benzene	0.18	2.1	0.76	9.2
m,p-Xylene	0.18	10	0.76	44
o-Xylene	0.18	2.9	0.76	13
Styrene	0.18	Not Detected	0.74	Not Detected
1,1,2,2-Tetrachloroethane	0.18	Not Detected	1.2	Not Detected
1,3,5-Trimethylbenzene	0.18	0.063 J	0.86	0.31 J
1,2,4-Trimethylbenzene	0.18	0.16 J	0.86	0.79 J
1,3-Dichlorobenzene	0.18	Not Detected	1.0	Not Detected
1,4-Dichlorobenzene	0.18	Not Detected	1.0	Not Detected
alpha-Chlorotoluene	0.18	Not Detected	0.90	Not Detected
1,2-Dichlorobenzene	0.18	Not Detected	1.0	Not Detected
Methylene Chloride	0.35	0.20 J	1.2	0.71 J
1,2,4-Trichlorobenzene	0.88	Not Detected	6.5	Not Detected
Hexachlorobutadiene	0.88	Not Detected	9.3	Not Detected
1,3-Butadiene	0.88	Not Detected	1.9	Not Detected
Acetone	0.88	14	2.1	32
Carbon Disulfide	0.88	4.8	2.7	15

AIR TOXICS LTD.

Client Sample ID: #12335, Station 1, Office Bldg.

Lab ID#: 0507550R1-01A

MODIFIED EPA METHOD TO-15 GC/MS FULL SCAN

File Name:	7080209	Date of Collection: 7/21/05	
Dil. Factor:	1.75	Date of Analysis: 8/2/05 10:55 PM	

Compound	Rpt. Limit (ppbv)	Amount (ppbv)	Rpt. Limit (uG/m3)	Amount (uG/m3)
2-Propanol	0.88	1.4	2.2	3.3
trans-1,2-Dichloroethene	0.88	Not Detected	3.5	Not Detected
2-Butanone (Methyl Ethyl Ketone)	0.88	0.51 J	2.6	1.5 J
Hexane	0.88	0.43 J	3.1	1.5 J
Tetrahydrofuran	0.88	0.14 J	2.6	0.42 J
Cyclohexane	0.88	0.16 J	3.0	0.53 J
1,4-Dioxane	0.88	Not Detected	3.2	Not Detected
Bromodichloromethane	0.88	Not Detected	5.9	Not Detected
4-Methyl-2-pentanone	0.88	0.094 J	3.6	0.38 J
2-Hexanone	0.88	Not Detected	3.6	Not Detected
Dibromochloromethane	0.88	Not Detected	7.4	Not Detected
Bromoform	0.88	Not Detected	9.0	Not Detected
4-Ethyltoluene	0.88	0.20 J	4.3	1.0 J
Ethanol	0.88	18	1.6	34
Methyl tert-butyl ether	0.88	Not Detected	3.2	Not Detected
Heptane	0.88	0.73 J	3.6	3.0 J
Cumene	0.88	0.054 J	4.3	0.26 J
Propylbenzene	0.88	0.036 J	4.3	0.18 J
Naphthalene	0.88	7.4	4.6	39

J = Estimated value.

Container Type: 6 Liter Summa Special (100% Certified)

Surrogates	%Recovery	Method Limits
1,2-Dichloroethane-d4	95	70-130
Toluene-d8	100	70-130
4-Bromofluorobenzene	104	70-130

AIR TOXICS LTD.

Client Sample ID: #25270, Station 2, Outdoors, Roof of Office

Lab ID#: 0507550R1-02A

MODIFIED EPA METHOD TO-15 GC/MS FULL SCAN

File Name:	7080210	Date of Collection: 7/21/05
Dil. Factor:	1.83	Date of Analysis: 8/3/05 10:04 AM

Compound	Rpt. Limit (ppbv)	Amount (ppbv)	Rpt. Limit (uG/m3)	Amount (uG/m3)
Freon 12	0.18	0.22	0.90	1.1
Freon 114	0.18	Not Detected	1.3	Not Detected
Chloromethane	0.18	0.48	0.38	0.99
Vinyl Chloride	0.18	Not Detected	0.47	Not Detected
Bromomethane	0.18	0.10 J	0.71	0.39 J
Chloroethane	0.18	Not Detected	0.48	Not Detected
Freon 11	0.18	0.25	1.0	1.4
1,1-Dichloroethene	0.18	Not Detected	0.72	Not Detected
Freon 113	0.18	Not Detected	1.4	Not Detected
1,1-Dichloroethane	0.18	Not Detected	0.74	Not Detected
cis-1,2-Dichloroethene	0.18	Not Detected	0.72	Not Detected
Chloroform	0.18	Not Detected	0.89	Not Detected
1,1,1-Trichloroethane	0.18	Not Detected	1.0	Not Detected
Carbon Tetrachloride	0.18	0.085 J	1.2	0.53 J
Benzene	0.18	1.0	0.58	3.3
1,2-Dichloroethane	0.18	Not Detected	0.74	Not Detected
Trichloroethene	0.18	Not Detected	0.98	Not Detected
1,2-Dichloropropane	0.18	Not Detected	0.84	Not Detected
cis-1,3-Dichloropropene	0.18	Not Detected	0.83	Not Detected
Toluene	0.18	0.84	0.69	3.2
trans-1,3-Dichloropropene	0.18	Not Detected	0.83	Not Detected
1,1,2-Trichloroethane	0.18	Not Detected	1.0	Not Detected
Tetrachloroethene	0.18	Not Detected	1.2	Not Detected
1,2-Dibromoethane (EDB)	0.18	Not Detected	1.4	Not Detected
Chlorobenzene	0.18	Not Detected	0.84	Not Detected
Ethyl Benzene	0.18	0.18	0.79	0.79
m,p-Xylene	0.18	0.40	0.79	1.8
o-Xylene	0.18	0.14 J	0.79	0.61 J
Styrene	0.18	Not Detected	0.78	Not Detected
1,1,2,2-Tetrachloroethane	0.18	Not Detected	1.2	Not Detected
1,3,5-Trimethylbenzene	0.18	Not Detected	0.90	Not Detected
1,2,4-Trimethylbenzene	0.18	0.12 J	0.90	0.56 J
1,3-Dichlorobenzene	0.18	Not Detected	1.1	Not Detected
1,4-Dichlorobenzene	0.18	0.040 J	1.1	0.24 J
alpha-Chlorotoluene	0.18	Not Detected	0.95	Not Detected
1,2-Dichlorobenzene	0.18	Not Detected	1.1	Not Detected
Methylene Chloride	0.37	0.18 J	1.3	0.64 J
1,2,4-Trichlorobenzene	0.92	0.080 J	6.8	0.59 J
Hexachlorobutadiene	0.92	Not Detected	9.8	Not Detected
1,3-Butadiene	0.92	Not Detected	2.0	Not Detected
Acetone	0.92	8.3	2.2	20
Carbon Disulfide	0.92	1.3	2.8	4.0

AIR TOXICS LTD.

Client Sample ID: #25270, Station 2, Outdoors, Roof of Office

Lab ID#: 0507550R1-02A

MODIFIED EPA METHOD TO-15 GC/MS FULL SCAN

File Name:	7080210	Date of Collection: 7/21/05
Dil. Factor:	1.84	Date of Analysis: 8/3/05 10:04 AM

Compound	Rpt. Limit (ppbv)	Amount (ppbv)	Rpt. Limit (uG/m3)	Amount (uG/m3)
2-Propanol	0.92	1.1	2.2	2.8
trans-1,2-Dichloroethene	0.92	Not Detected	3.6	Not Detected
2-Butanone (Methyl Ethyl Ketone)	0.92	2.0	2.7	5.9
Hexane	0.92	0.29 J	3.2	1.0 J
Tetrahydrofuran	0.92	0.31 J	2.7	0.92 J
Cyclohexane	0.92	Not Detected	3.1	Not Detected
1,4-Dioxane	0.92	Not Detected	3.3	Not Detected
Bromodichloromethane	0.92	Not Detected	6.1	Not Detected
4-Methyl-2-pentanone	0.92	0.079 J	3.7	0.32 J
2-Hexanone	0.92	0.083 J	3.7	0.34 J
Dibromochloromethane	0.92	Not Detected	7.8	Not Detected
Bromoform	0.92	Not Detected	9.4	Not Detected
4-Ethyltoluene	0.92	0.15 J	4.5	0.75 J
Ethanol	0.92	3.2	1.7	5.9
Methyl tert-butyl ether	0.92	Not Detected	3.3	Not Detected
Heptane	0.92	0.60 J	3.7	2.5 J
Cumene	0.92	Not Detected	4.5	Not Detected
Propylbenzene	0.92	0.037 J	4.5	0.18 J
Naphthalene	0.92	7.8	4.8	41

J = Estimated value.

Container Type: 6 Liter Summa Special (100% Certified)

Surrogates	%Recovery	Method Limits
1,2-Dichloroethane-d4	94	70-130
Toluene-d8	98	70-130
4-Bromofluorobenzene	104	70-130

AIR TOXICS LTD.

Client Sample ID: #33678, Station 3, Control Room Bldg. Main Room

Lab ID#: 0507550R1-03A

MODIFIED EPA METHOD TO-15 GC/MS FULL SCAN

File Name:	7080211	Date of Collection: 7/21/05
Dil. Factor:	1.64	Date of Analysis: 8/3/05 10:59 AM

Compound	Rpt. Limit (ppbv)	Amount (ppbv)	Rpt. Limit (uG/m3)	Amount (uG/m3)
Freon 12	0.16	0.46	0.81	2.3
Freon 114	0.16	Not Detected	1.1	Not Detected
Chloromethane	0.16	0.48	0.34	1.0
Vinyl Chloride	0.16	Not Detected	0.42	Not Detected
Bromomethane	0.16	Not Detected	0.64	Not Detected
Chloroethane	0.16	Not Detected	0.43	Not Detected
Freon 11	0.16	0.27	0.92	1.5
1,1-Dichloroethene	0.16	Not Detected	0.65	Not Detected
Freon 113	0.16	Not Detected	1.2	Not Detected
1,1-Dichloroethane	0.16	Not Detected	0.66	Not Detected
cis-1,2-Dichloroethene	0.16	Not Detected	0.65	Not Detected
Chloroform	0.16	Not Detected	0.80	Not Detected
1,1,1-Trichloroethane	0.16	Not Detected	0.89	Not Detected
Carbon Tetrachloride	0.16	0.084 J	1.0	0.53 J
Benzene	0.16	1.0	0.52	3.4
1,2-Dichloroethane	0.16	Not Detected	0.66	Not Detected
Trichloroethene	0.16	Not Detected	0.88	Not Detected
1,2-Dichloropropane	0.16	Not Detected	0.76	Not Detected
cis-1,3-Dichloropropene	0.16	Not Detected	0.74	Not Detected
Toluene	0.16	0.76	0.62	2.9
trans-1,3-Dichloropropene	0.16	Not Detected	0.74	Not Detected
1,1,2-Trichloroethane	0.16	Not Detected	0.89	Not Detected
Tetrachloroethene	0.16	Not Detected	1.1	Not Detected
1,2-Dibromoethane (EDB)	0.16	Not Detected	1.3	Not Detected
Chlorobenzene	0.16	Not Detected	0.76	Not Detected
Ethyl Benzene	0.16	0.12 J	0.71	0.54 J
m,p-Xylene	0.16	0.40	0.71	1.7
o-Xylene	0.16	0.14 J	0.71	0.60 J
Styrene	0.16	0.70	0.70	3.0
1,1,2,2-Tetrachloroethane	0.16	Not Detected	1.1	Not Detected
1,3,5-Trimethylbenzene	0.16	Not Detected	0.81	Not Detected
1,2,4-Trimethylbenzene	0.16	0.10 J	0.81	0.50 J
1,3-Dichlorobenzene	0.16	Not Detected	0.99	Not Detected
1,4-Dichlorobenzene	0.16	Not Detected	0.99	Not Detected
alpha-Chlorotoluene	0.16	Not Detected	0.85	Not Detected
1,2-Dichlorobenzene	0.16	Not Detected	0.99	Not Detected
Methylene Chloride	0.33	0.16 J	1.1	0.56 J
1,2,4-Trichlorobenzene	0.82	Not Detected	6.1	Not Detected
Hexachlorobutadiene	0.82	Not Detected	8.7	Not Detected
1,3-Butadiene	0.82	Not Detected	1.8	Not Detected
Acetone	0.82	7.6	1.9	18
Carbon Disulfide	0.82	0.10 J	2.6	0.33 J

AIR TOXICS LTD.

Client Sample ID: #33678, Station 3, Control Room Bldg. Main Room

Lab ID#: 0507550R1-03A

MODIFIED EPA METHOD TO-15 GC/MS FULL SCAN

File Name:	7080211	Date of Collection:	7/21/05
Dil. Factor:	1.64	Date of Analysis:	8/3/05 10:59 AM

Compound	Rpt. Limit (ppbv)	Amount (ppbv)	Rpt. Limit (uG/m3)	Amount (uG/m3)
2-Propanol	0.82	140 E	2.0	330 E
trans-1,2-Dichloroethene	0.82	Not Detected	3.2	Not Detected
2-Butanone (Methyl Ethyl Ketone)	0.82	0.67 J	2.4	2.0 J
Hexane	0.82	0.30 J	2.9	1.0 J
Tetrahydrofuran	0.82	0.16 J	2.4	0.48 J
Cyclohexane	0.82	0.11 J	2.8	0.36 J
1,4-Dioxane	0.82	Not Detected	3.0	Not Detected
Bromodichloromethane	0.82	Not Detected	5.5	Not Detected
4-Methyl-2-pentanone	0.82	0.052 J	3.4	0.21 J
2-Hexanone	0.82	Not Detected	3.4	Not Detected
Dibromochloromethane	0.82	Not Detected	7.0	Not Detected
Bromoform	0.82	Not Detected	8.5	Not Detected
4-Ethyltoluene	0.82	0.10 J	4.0	0.51 J
Ethanol	0.82	7.5	1.5	14
Methyl tert-butyl ether	0.82	Not Detected	3.0	Not Detected
Heptane	0.82	0.25 J	3.4	1.0 J
Cumene	0.82	Not Detected	4.0	Not Detected
Propylbenzene	0.82	Not Detected	4.0	Not Detected
Naphthalene	0.82	1.8	4.3	9.4

J = Estimated value.
E = Exceeds instrument calibration range.
Container Type: 6 Liter Summa Special (100% Certified)

Surrogates	%Recovery	Method Limits
1,2-Dichloroethane-d4	95	70-130
Toluene-d8	98	70-130
4-Bromofluorobenzene	104	70-130

AIR TOXICS LTD.

Client Sample ID: #33975, Station 4, Outdoors, North of Pencil Pitc

Lab ID#: 0507550R1-04A

MODIFIED EPA METHOD TO-15 GC/MS FULL SCAN

File Name:	7080212	Date of Collection:	7/21/05
Dil. Factor:	1.71	Date of Analysis:	8/3/05 11:55 AM

Compound	Rpt. Limit (ppbv)	Amount (ppbv)	Rpt. Limit (uG/m3)	Amount (uG/m3)
Freon 12	0.17	0.47	0.84	2.3
Freon 114	0.17	Not Detected	1.2	Not Detected
Chloromethane	0.17	0.50	0.35	1.0
Vinyl Chloride	0.17	Not Detected	0.44	Not Detected
Bromomethane	0.17	Not Detected	0.66	Not Detected
Chloroethane	0.17	Not Detected	0.45	Not Detected
Freon 11	0.17	0.27	0.96	1.5
1,1-Dichloroethene	0.17	Not Detected	0.68	Not Detected
Freon 113	0.17	Not Detected	1.3	Not Detected
1,1-Dichloroethane	0.17	Not Detected	0.69	Not Detected
cis-1,2-Dichloroethene	0.17	Not Detected	0.68	Not Detected
Chloroform	0.17	Not Detected	0.83	Not Detected
1,1,1-Trichloroethane	0.17	Not Detected	0.93	Not Detected
Carbon Tetrachloride	0.17	0.086 J	1.1	0.54 J
Benzene	0.17	1.5	0.55	4.7
1,2-Dichloroethane	0.17	Not Detected	0.69	Not Detected
Trichloroethene	0.17	Not Detected	0.92	Not Detected
1,2-Dichloropropane	0.17	Not Detected	0.79	Not Detected
cis-1,3-Dichloropropene	0.17	Not Detected	0.78	Not Detected
Toluene	0.17	1.1	0.64	4.3
trans-1,3-Dichloropropene	0.17	Not Detected	0.78	Not Detected
1,1,2-Trichloroethane	0.17	Not Detected	0.93	Not Detected
Tetrachloroethene	0.17	Not Detected	1.2	Not Detected
1,2-Dibromoethane (EDB)	0.17	Not Detected	1.3	Not Detected
Chlorobenzene	0.17	Not Detected	0.79	Not Detected
Ethyl Benzene	0.17	0.18	0.74	0.79
m,p-Xylene	0.17	0.61	0.74	2.6
o-Xylene	0.17	0.22	0.74	0.95
Styrene	0.17	Not Detected	0.73	Not Detected
1,1,2,2-Tetrachloroethane	0.17	Not Detected	1.2	Not Detected
1,3,5-Trimethylbenzene	0.17	Not Detected	0.84	Not Detected
1,2,4-Trimethylbenzene	0.17	0.15 J	0.84	0.72 J
1,3-Dichlorobenzene	0.17	Not Detected	1.0	Not Detected
1,4-Dichlorobenzene	0.17	Not Detected	1.0	Not Detected
alpha-Chlorotoluene	0.17	Not Detected	0.88	Not Detected
1,2-Dichlorobenzene	0.17	Not Detected	1.0	Not Detected
Methylene Chloride	0.34	0.17 J	1.2	0.60 J
1,2,4-Trichlorobenzene	0.86	Not Detected	6.3	Not Detected
Hexachlorobutadiene	0.86	Not Detected	9.1	Not Detected
1,3-Butadiene	0.86	Not Detected	1.9	Not Detected
Acetone	0.86	8.0	2.0	19
Carbon Disulfide	0.86	0.11 J	2.7	0.33 J

AIR TOXICS LTD.

Client Sample ID: #33975, Station 4, Outdoors, North of Pencil Pitc

Lab ID#: 0507550R1-04A

MODIFIED EPA METHOD TO-15 GC/MS FULL SCAN

File Name:	7080212	Date of Collection: 7/21/05
Dil. Factor:	[illegible]	Date of Analysis: 8/3/05 01:56 AM

Compound	Rpt. Limit (ppbv)	Amount (ppbv)	Rpt. Limit (uG/m3)	Amount (uG/m3)
2-Propanol	0.86	1.7	2.1	4.1
trans-1,2-Dichloroethene	0.86	Not Detected	3.4	Not Detected
2-Butanone (Methyl Ethyl Ketone)	0.86	0.99	2.5	2.9
Hexane	0.86	0.36 J	3.0	1.3 J
Tetrahydrofuran	0.86	0.13 J	2.5	0.40 J
Cyclohexane	0.86	0.18 J	2.9	0.61 J
1,4-Dioxane	0.86	Not Detected	3.1	Not Detected
Bromodichloromethane	0.86	Not Detected	5.7	Not Detected
4-Methyl-2-pentanone	0.86	0.058 J	3.5	0.24 J
2-Hexanone	0.86	0.081 J	3.5	0.33 J
Dibromochloromethane	0.86	Not Detected	7.3	Not Detected
Bromoform	0.86	Not Detected	8.8	Not Detected
4-Ethyltoluene	0.86	0.17 J	4.2	0.84 J
Ethanol	0.86	2.9	1.6	5.5
Methyl tert-butyl ether	0.86	Not Detected	3.1	Not Detected
Heptane	0.86	0.36 J	3.5	1.5 J
Cumene	0.86	Not Detected	4.2	Not Detected
Propylbenzene	0.86	0.044 J	4.2	0.22 J
Naphthalene	0.86	0.37 J	4.5	1.9 J

J = Estimated value.

Container Type: 6 Liter Summa Special (100% Certified)

Surrogates	%Recovery	Method Limits
1,2-Dichloroethane-d4	96	70-130
Toluene-d8	98	70-130
4-Bromofluorobenzene	102	70-130

AIR TOXICS LTD.

Client Sample ID: #33975, Station 4, Outdoors, North of Pencil Dup

Lab ID#: 0507550R1-04AA

MODIFIED EPA METHOD TO-15 GC/MS FULL SCAN

File Name:	[illegible]	Date of Collection: 7/21/05
Dil. Factor:	[illegible]	Date of Analysis: 8/3/05 12:59 PM

Compound	Rpt. Limit (ppbv)	Amount (ppbv)	Rpt. Limit (uG/m3)	Amount (uG/m3)
Freon 12	0.17	0.51	0.84	2.5
Freon 114	0.17	Not Detected	1.2	Not Detected
Chloromethane	0.17	0.50	0.35	1.0
Vinyl Chloride	0.17	Not Detected	0.44	Not Detected
Bromomethane	0.17	Not Detected	0.66	Not Detected
Chloroethane	0.17	Not Detected	0.45	Not Detected
Freon 11	0.17	0.26	0.96	1.5
1,1-Dichloroethene	0.17	Not Detected	0.68	Not Detected
Freon 113	0.17	Not Detected	1.3	Not Detected
1,1-Dichloroethane	0.17	Not Detected	0.69	Not Detected
cis-1,2-Dichloroethene	0.17	Not Detected	0.68	Not Detected
Chloroform	0.17	Not Detected	0.83	Not Detected
1,1,1-Trichloroethane	0.17	Not Detected	0.93	Not Detected
Carbon Tetrachloride	0.17	0.086 J	1.1	0.54 J
Benzene	0.17	1.4	0.55	4.6
1,2-Dichloroethane	0.17	Not Detected	0.69	Not Detected
Trichloroethene	0.17	Not Detected	0.92	Not Detected
1,2-Dichloropropane	0.17	Not Detected	0.79	Not Detected
cis-1,3-Dichloropropene	0.17	Not Detected	0.78	Not Detected
Toluene	0.17	1.2	0.64	4.4
trans-1,3-Dichloropropene	0.17	Not Detected	0.78	Not Detected
1,1,2-Trichloroethane	0.17	Not Detected	0.93	Not Detected
Tetrachloroethene	0.17	Not Detected	1.2	Not Detected
1,2-Dibromoethane (EDB)	0.17	Not Detected	1.3	Not Detected
Chlorobenzene	0.17	Not Detected	0.79	Not Detected
Ethyl Benzene	0.17	0.17	0.74	0.76
m,p-Xylene	0.17	0.57	0.74	2.5
o-Xylene	0.17	0.20	0.74	0.88
Styrene	0.17	Not Detected	0.73	Not Detected
1,1,2,2-Tetrachloroethane	0.17	Not Detected	1.2	Not Detected
1,3,5-Trimethylbenzene	0.17	Not Detected	0.84	Not Detected
1,2,4-Trimethylbenzene	0.17	0.16 J	0.84	0.77 J
1,3-Dichlorobenzene	0.17	Not Detected	1.0	Not Detected
1,4-Dichlorobenzene	0.17	Not Detected	1.0	Not Detected
alpha-Chlorotoluene	0.17	Not Detected	0.88	Not Detected
1,2-Dichlorobenzene	0.17	Not Detected	1.0	Not Detected
Methylene Chloride	0.34	0.18 J	1.2	0.63 J
1,2,4-Trichlorobenzene	0.86	Not Detected	6.3	Not Detected
Hexachlorobutadiene	0.86	Not Detected	9.1	Not Detected
1,3-Butadiene	0.86	Not Detected	1.9	Not Detected
Acetone	0.86	8.2	2.0	19
Carbon Disulfide	0.86	0.11 J	2.7	0.35 J

AIR TOXICS LTD.

Client Sample ID: #33975, Station 4, Outdoors, North of Pencil Dup

Lab ID#: 0507550R1-04AA

MODIFIED EPA METHOD TO-15 GC/MS FULL SCAN

File Name:	7080213	Date of Collection:	7/21/05
Dil. Factor:	1.71	Date of Analysis:	8/3/05 12:59 PM

Compound	Rpt. Limit (ppbv)	Amount (ppbv)	Rpt. Limit (uG/m3)	Amount (uG/m3)
2-Propanol	0.86	1.4	2.1	3.6
trans-1,2-Dichloroethene	0.86	Not Detected	3.4	Not Detected
2-Butanone (Methyl Ethyl Ketone)	0.86	0.94	2.5	2.8
Hexane	0.86	0.34 J	3.0	1.2 J
Tetrahydrofuran	0.86	0.13 J	2.5	0.37 J
Cyclohexane	0.86	0.19 J	2.9	0.66 J
1,4-Dioxane	0.86	Not Detected	3.1	Not Detected
Bromodichloromethane	0.86	Not Detected	5.7	Not Detected
4-Methyl-2-pentanone	0.86	0.070 J	3.5	0.29 J
2-Hexanone	0.86	0.070 J	3.5	0.29 J
Dibromochloromethane	0.86	Not Detected	7.3	Not Detected
Bromoform	0.86	Not Detected	8.8	Not Detected
4-Ethyltoluene	0.86	0.16 J	4.2	0.82 J
Ethanol	0.86	2.8	1.6	5.2
Methyl tert-butyl ether	0.86	Not Detected	3.1	Not Detected
Heptane	0.86	0.35 J	3.5	1.4 J
Cumene	0.86	Not Detected	4.2	Not Detected
Propylbenzene	0.86	0.041 J	4.2	0.20 J
Naphthalene	0.86	Not Detected	4.5	Not Detected

J = Estimated value.

Container Type: 6 Liter Summa Special (100% Certified)

Surrogates	%Recovery	Method Limits
1,2-Dichloroethane-d4	95	70-130
Toluene-d8	98	70-130
4-Bromofluorobenzene	103	70-130

AIR TOXICS LTD.

Client Sample ID: #34442, Station 5, Outdoors, North of tanks

Lab ID#: 0507550R1-05A

MODIFIED EPA METHOD TO-15 GC/MS FULL SCAN

File Name:	7080214	Date of Collection: 7/21/05
Dil. Factor:	1.79	Date of Analysis: 8/3/05 02:08 PM

Compound	Rpt. Limit (ppbv)	Amount (ppbv)	Rpt. Limit (uG/m3)	Amount (uG/m3)
Freon 12	0.18	0.51	0.88	2.5
Freon 114	0.18	Not Detected	1.2	Not Detected
Chloromethane	0.18	0.49	0.37	1.0
Vinyl Chloride	0.18	Not Detected	0.46	Not Detected
Bromomethane	0.18	Not Detected	0.70	Not Detected
Chloroethane	0.18	Not Detected	0.47	Not Detected
Freon 11	0.18	0.28	1.0	1.6
1,1-Dichloroethene	0.18	Not Detected	0.71	Not Detected
Freon 113	0.18	Not Detected	1.4	Not Detected
1,1-Dichloroethane	0.18	Not Detected	0.72	Not Detected
cis-1,2-Dichloroethene	0.18	Not Detected	0.71	Not Detected
Chloroform	0.18	Not Detected	0.87	Not Detected
1,1,1-Trichloroethane	0.18	Not Detected	0.98	Not Detected
Carbon Tetrachloride	0.18	0.086 J	1.1	0.54 J
Benzene	0.18	0.25	0.57	0.80
1,2-Dichloroethane	0.18	Not Detected	0.72	Not Detected
Trichloroethene	0.18	Not Detected	0.96	Not Detected
1,2-Dichloropropane	0.18	Not Detected	0.83	Not Detected
cis-1,3-Dichloropropene	0.18	Not Detected	0.81	Not Detected
Toluene	0.18	0.43	0.67	1.6
trans-1,3-Dichloropropene	0.18	Not Detected	0.81	Not Detected
1,1,2-Trichloroethane	0.18	Not Detected	0.98	Not Detected
Tetrachloroethene	0.18	Not Detected	1.2	Not Detected
1,2-Dibromoethane (EDB)	0.18	Not Detected	1.4	Not Detected
Chlorobenzene	0.18	Not Detected	0.82	Not Detected
Ethyl Benzene	0.18	0.075 J	0.78	0.32 J
m,p-Xylene	0.18	0.26	0.78	1.1
o-Xylene	0.18	0.076 J	0.78	0.33 J
Styrene	0.18	Not Detected	0.76	Not Detected
1,1,2,2-Tetrachloroethane	0.18	Not Detected	1.2	Not Detected
1,3,5-Trimethylbenzene	0.18	Not Detected	0.88	Not Detected
1,2,4-Trimethylbenzene	0.18	0.060 J	0.88	0.29 J
1,3-Dichlorobenzene	0.18	Not Detected	1.1	Not Detected
1,4-Dichlorobenzene	0.18	Not Detected	1.1	Not Detected
alpha-Chlorotoluene	0.18	Not Detected	0.93	Not Detected
1,2-Dichlorobenzene	0.18	Not Detected	1.1	Not Detected
Methylene Chloride	0.36	0.16 J	1.2	0.56 J
1,2,4-Trichlorobenzene	0.90	Not Detected	6.6	Not Detected
Hexachlorobutadiene	0.90	Not Detected	9.5	Not Detected
1,3-Butadiene	0.90	Not Detected	2.0	Not Detected
Acetone	0.90	9.3	2.1	22
Carbon Disulfide	0.90	0.12 J	2.8	0.38 J

AIR TOXICS LTD.

Client Sample ID: #34442, Station 5, Outdoors, North of tanks

Lab ID#: 0507550R1-05A

MODIFIED EPA METHOD TO-15 GC/MS FULL SCAN

File Name:	7080214	Date of Collection: 7/21/05	
Dil. Factor:	1.79	Date of Analysis: 8/8/05 02:08 PM	

Compound	Rpt. Limit (ppbv)	Amount (ppbv)	Rpt. Limit (uG/m3)	Amount (uG/m3)
2-Propanol	0.90	0.68 J	2.2	1.7 J
trans-1,2-Dichloroethene	0.90	Not Detected	3.5	Not Detected
2-Butanone (Methyl Ethyl Ketone)	0.90	1.4	2.6	4.0
Hexane	0.90	0.94	3.2	3.3
Tetrahydrofuran	0.90	0.094 J	2.6	0.28 J
Cyclohexane	0.90	0.23 J	3.1	0.78 J
1,4-Dioxane	0.90	Not Detected	3.2	Not Detected
Bromodichloromethane	0.90	Not Detected	6.0	Not Detected
4-Methyl-2-pentanone	0.90	0.053 J	3.7	0.22 J
2-Hexanone	0.90	0.095 J	3.7	0.39 J
Dibromochloromethane	0.90	Not Detected	7.6	Not Detected
Bromoform	0.90	Not Detected	9.2	Not Detected
4-Ethyltoluene	0.90	0.070 J	4.4	0.34 J
Ethanol	0.90	4.3	1.7	8.1
Methyl tert-butyl ether	0.90	Not Detected	3.2	Not Detected
Heptane	0.90	0.44 J	3.7	1.8 J
Cumene	0.90	Not Detected	4.4	Not Detected
Propylbenzene	0.90	Not Detected	4.4	Not Detected
Naphthalene	0.90	Not Detected	4.7	Not Detected

J = Estimated value.

Container Type: 6 Liter Summa Special (100% Certified)

Surrogates	%Recovery	Method Limits
1,2-Dichloroethane-d4	96	70-130
Toluene-d8	98	70-130
4-Bromofluorobenzene	104	70-130

AIR TOXICS LTD.

Client Sample ID: #94191, Station 6, Outdoors, by Gasco Guard Shack

Lab ID#: 0507550R1-06A

MODIFIED EPA METHOD TO-15 GC/MS FULL SCAN

File Name:	7080306	Date of Collection: 7/21/05
Dil. Factor:	1.71	Date of Analysis: 8/3/05 09:44 PM

Compound	Rpt. Limit (ppbv)	Amount (ppbv)	Rpt. Limit (uG/m3)	Amount (uG/m3)
Freon 12	0.17	0.48	0.84	2.4
Freon 114	0.17	Not Detected	1.2	Not Detected
Chloromethane	0.17	0.46	0.35	0.94
Vinyl Chloride	0.17	Not Detected	0.44	Not Detected
Bromomethane	0.17	Not Detected	0.66	Not Detected
Chloroethane	0.17	Not Detected	0.45	Not Detected
Freon 11	0.17	0.27	0.96	1.5
1,1-Dichloroethene	0.17	Not Detected	0.68	Not Detected
Freon 113	0.17	Not Detected	1.3	Not Detected
1,1-Dichloroethane	0.17	Not Detected	0.69	Not Detected
cis-1,2-Dichloroethene	0.17	Not Detected	0.68	Not Detected
Chloroform	0.17	Not Detected	0.83	Not Detected
1,1,1-Trichloroethane	0.17	Not Detected	0.93	Not Detected
Carbon Tetrachloride	0.17	0.079 J	1.1	0.50 J
Benzene	0.17	0.23	0.55	0.74
1,2-Dichloroethane	0.17	Not Detected	0.69	Not Detected
Trichloroethene	0.17	Not Detected	0.92	Not Detected
1,2-Dichloropropane	0.17	Not Detected	0.79	Not Detected
cis-1,3-Dichloropropene	0.17	Not Detected	0.78	Not Detected
Toluene	0.17	0.44	0.64	1.7
trans-1,3-Dichloropropene	0.17	Not Detected	0.78	Not Detected
1,1,2-Trichloroethane	0.17	Not Detected	0.93	Not Detected
Tetrachloroethene	0.17	Not Detected	1.2	Not Detected
1,2-Dibromoethane (EDB)	0.17	Not Detected	1.3	Not Detected
Chlorobenzene	0.17	Not Detected	0.79	Not Detected
Ethyl Benzene	0.17	0.086 J	0.74	0.37 J
m,p-Xylene	0.17	0.32	0.74	1.4
o-Xylene	0.17	0.097 J	0.74	0.42 J
Styrene	0.17	Not Detected	0.73	Not Detected
1,1,2,2-Tetrachloroethane	0.17	Not Detected	1.2	Not Detected
1,3,5-Trimethylbenzene	0.17	Not Detected	0.84	Not Detected
1,2,4-Trimethylbenzene	0.17	0.065 J	0.84	0.32 J
1,3-Dichlorobenzene	0.17	Not Detected	1.0	Not Detected
1,4-Dichlorobenzene	0.17	Not Detected	1.0	Not Detected
alpha-Chlorotoluene	0.17	Not Detected	0.88	Not Detected
1,2-Dichlorobenzene	0.17	Not Detected	1.0	Not Detected
Methylene Chloride	0.34	0.16 J	1.2	0.56 J
1,2,4-Trichlorobenzene	0.86	Not Detected	6.3	Not Detected
Hexachlorobutadiene	0.86	Not Detected	9.1	Not Detected
1,3-Butadiene	0.86	Not Detected	1.9	Not Detected
Acetone	0.86	2.8	2.0	6.7
Carbon Disulfide	0.86	0.18 J	2.7	0.56 J

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AIR TOXICS LTD.

Client Sample ID: #94191, Station 6, Outdoors, by Gasco Guard Shack

Lab ID#: 0507550R1-06A

MODIFIED EPA METHOD TO-15 GC/MS FULL SCAN

File Name:	7080306	Date of Collection:	7/21/05
Dil. Factor:	1.71	Date of Analysis:	8/3/05 09:44 PM

Compound	Rpt. Limit (ppbv)	Amount (ppbv)	Rpt. Limit (uG/m3)	Amount (uG/m3)
2-Propanol	0.86	0.46 J	2.1	1.1 J
trans-1,2-Dichloroethene	0.86	Not Detected	3.4	Not Detected
2-Butanone (Methyl Ethyl Ketone)	0.86	0.26 J	2.5	0.78 J
Hexane	0.86	0.20 J	3.0	0.69 J
Tetrahydrofuran	0.86	0.11 J	2.5	0.31 J
Cyclohexane	0.86	Not Detected	2.9	Not Detected
1,4-Dioxane	0.86	Not Detected	3.1	Not Detected
Bromodichloromethane	0.86	Not Detected	5.7	Not Detected
4-Methyl-2-pentanone	0.86	Not Detected	3.5	Not Detected
2-Hexanone	0.86	Not Detected	3.5	Not Detected
Dibromochloromethane	0.86	Not Detected	7.3	Not Detected
Bromoform	0.86	Not Detected	8.8	Not Detected
4-Ethyltoluene	0.86	0.067 J	4.2	0.33 J
Ethanol	0.86	2.9	1.6	5.5
Methyl tert-butyl ether	0.86	Not Detected	3.1	Not Detected
Heptane	0.86	0.086 J	3.5	0.35 J
Cumene	0.86	Not Detected	4.2	Not Detected
Propylbenzene	0.86	Not Detected	4.2	Not Detected
Naphthalene	0.86	Not Detected	4.5	Not Detected

J = Estimated value.

Container Type: 6 Liter Summa Special (100% Certified)

Surrogates	%Recovery	Method Limits
1,2-Dichloroethane-d4	96	70-130
Toluene-d8	99	70-130
4-Bromofluorobenzene	103	70-130

AIR TOXICS LTD.

Client Sample ID: Lab Blank

Lab ID#: 0507550R1-07A

MODIFIED EPA METHOD TO-15 GC/MS FULL SCAN

File Name:	7080207aR1	Date of Collection: NA
Dil. Factor:	1.00	Date of Analysis: 8/2/05 08:36 PM

Compound	Rpt. Limit (ppbv)	Amount (ppbv)	Rpt. Limit (uG/m3)	Amount (uG/m3)
Freon 12	0.10	Not Detected	0.49	Not Detected
Freon 114	0.10	Not Detected	0.70	Not Detected
Chloromethane	0.10	Not Detected	0.21	Not Detected
Vinyl Chloride	0.10	Not Detected	0.26	Not Detected
Bromomethane	0.10	Not Detected	0.39	Not Detected
Chloroethane	0.10	Not Detected	0.26	Not Detected
Freon 11	0.10	Not Detected	0.56	Not Detected
1,1-Dichloroethene	0.10	Not Detected	0.40	Not Detected
Freon 113	0.10	Not Detected	0.77	Not Detected
1,1-Dichloroethane	0.10	Not Detected	0.40	Not Detected
cis-1,2-Dichloroethene	0.10	Not Detected	0.40	Not Detected
Chloroform	0.10	Not Detected	0.49	Not Detected
1,1,1-Trichloroethane	0.10	Not Detected	0.54	Not Detected
Carbon Tetrachloride	0.10	Not Detected	0.63	Not Detected
Benzene	0.10	Not Detected	0.32	Not Detected
1,2-Dichloroethane	0.10	Not Detected	0.40	Not Detected
Trichloroethene	0.10	Not Detected	0.54	Not Detected
1,2-Dichloropropane	0.10	Not Detected	0.46	Not Detected
cis-1,3-Dichloropropene	0.10	Not Detected	0.45	Not Detected
Toluene	0.10	Not Detected	0.38	Not Detected
trans-1,3-Dichloropropene	0.10	Not Detected	0.45	Not Detected
1,1,2-Trichloroethane	0.10	Not Detected	0.54	Not Detected
Tetrachloroethene	0.10	Not Detected	0.68	Not Detected
1,2-Dibromoethane (EDB)	0.10	Not Detected	0.77	Not Detected
Chlorobenzene	0.10	Not Detected	0.46	Not Detected
Ethyl Benzene	0.10	Not Detected	0.43	Not Detected
m,p-Xylene	0.10	Not Detected	0.43	Not Detected
o-Xylene	0.10	Not Detected	0.43	Not Detected
Styrene	0.10	Not Detected	0.42	Not Detected
1,1,2,2-Tetrachloroethane	0.10	Not Detected	0.69	Not Detected
1,3,5-Trimethylbenzene	0.10	Not Detected	0.49	Not Detected
1,2,4-Trimethylbenzene	0.10	Not Detected	0.49	Not Detected
1,3-Dichlorobenzene	0.10	Not Detected	0.60	Not Detected
1,4-Dichlorobenzene	0.10	Not Detected	0.60	Not Detected
alpha-Chlorotoluene	0.10	Not Detected	0.52	Not Detected
1,2-Dichlorobenzene	0.10	Not Detected	0.60	Not Detected
Methylene Chloride	0.20	Not Detected	0.69	Not Detected
1,2,4-Trichlorobenzene	0.50	Not Detected	3.7	Not Detected
Hexachlorobutadiene	0.50	Not Detected	5.3	Not Detected
1,3-Butadiene	0.50	Not Detected	1.1	Not Detected
Acetone	0.50	0.15 J	1.2	0.35 J
Carbon Disulfide	0.50	Not Detected	1.6	Not Detected

AIR TOXICS LTD.

Client Sample ID: Lab Blank

Lab ID#: 0507550R1-07A

MODIFIED EPA METHOD TO-15 GC/MS FULL SCAN

File Name:	7080207aR1	Date of Collection: NA
Dil. Factor:	1.00	Date of Analysis: 8/2/05 08:36 PM

Compound	Rpt. Limit (ppbv)	Amount (ppbv)	Rpt. Limit (uG/m3)	Amount (uG/m3)
2-Propanol	0.50	0.079 J	1.2	0.19 J
trans-1,2-Dichloroethene	0.50	Not Detected	2.0	Not Detected
2-Butanone (Methyl Ethyl Ketone)	0.50	Not Detected	1.5	Not Detected
Hexane	0.50	Not Detected	1.8	Not Detected
Tetrahydrofuran	0.50	Not Detected	1.5	Not Detected
Cyclohexane	0.50	Not Detected	1.7	Not Detected
1,4-Dioxane	0.50	Not Detected	1.8	Not Detected
Bromodichloromethane	0.50	Not Detected	3.4	Not Detected
4-Methyl-2-pentanone	0.50	Not Detected	2.0	Not Detected
2-Hexanone	0.50	Not Detected	2.0	Not Detected
Dibromochloromethane	0.50	Not Detected	4.2	Not Detected
Bromoform	0.50	Not Detected	5.2	Not Detected
4-Ethyltoluene	0.50	Not Detected	2.4	Not Detected
Ethanol	0.50	Not Detected	0.94	Not Detected
Methyl tert-butyl ether	0.50	Not Detected	1.8	Not Detected
Heptane	0.50	Not Detected	2.0	Not Detected
Cumene	0.50	Not Detected	2.4	Not Detected
Propylbenzene	0.50	Not Detected	2.4	Not Detected
Naphthalene	0.50	0.32 J	2.6	1.7 J

J = Estimated value.

Container Type: NA - Not Applicable

Surrogates	%Recovery	Method Limits
1,2-Dichloroethane-d4	94	70-130
Toluene-d8	98	70-130
4-Bromofluorobenzene	101	70-130

AIR TOXICS LTD.

Client Sample ID: Lab Blank

Lab ID#: 0507550R1-07B

MODIFIED EPA METHOD TO-15 GC/MS FULL SCAN

File Name:	7080805	Date of Collection: NA
Dil. Factor:	1.00	Date of Analysis: 8/8/05 07:56 PM

Compound	Rpt. Limit (ppbv)	Amount (ppbv)	Rpt. Limit (uG/m3)	Amount (uG/m3)
Freon 12	0.10	Not Detected	0.49	Not Detected
Freon 114	0.10	Not Detected	0.70	Not Detected
Chloromethane	0.10	Not Detected	0.21	Not Detected
Vinyl Chloride	0.10	Not Detected	0.26	Not Detected
Bromomethane	0.10	Not Detected	0.39	Not Detected
Chloroethane	0.10	Not Detected	0.26	Not Detected
Freon 11	0.10	Not Detected	0.56	Not Detected
1,1-Dichloroethene	0.10	Not Detected	0.40	Not Detected
Freon 113	0.10	Not Detected	0.77	Not Detected
1,1-Dichloroethane	0.10	Not Detected	0.40	Not Detected
cis-1,2-Dichloroethene	0.10	Not Detected	0.40	Not Detected
Chloroform	0.10	Not Detected	0.49	Not Detected
1,1,1-Trichloroethane	0.10	Not Detected	0.54	Not Detected
Carbon Tetrachloride	0.10	Not Detected	0.63	Not Detected
Benzene	0.10	0.040 J	0.32	0.13 J
1,2-Dichloroethane	0.10	Not Detected	0.40	Not Detected
Trichloroethene	0.10	Not Detected	0.54	Not Detected
1,2-Dichloropropane	0.10	Not Detected	0.46	Not Detected
cis-1,3-Dichloropropene	0.10	Not Detected	0.45	Not Detected
Toluene	0.10	Not Detected	0.38	Not Detected
trans-1,3-Dichloropropene	0.10	Not Detected	0.45	Not Detected
1,1,2-Trichloroethane	0.10	Not Detected	0.54	Not Detected
Tetrachloroethene	0.10	Not Detected	0.68	Not Detected
1,2-Dibromoethane (EDB)	0.10	Not Detected	0.77	Not Detected
Chlorobenzene	0.10	Not Detected	0.46	Not Detected
Ethyl Benzene	0.10	Not Detected	0.43	Not Detected
m,p-Xylene	0.10	Not Detected	0.43	Not Detected
o-Xylene	0.10	Not Detected	0.43	Not Detected
Styrene	0.10	Not Detected	0.42	Not Detected
1,1,2,2-Tetrachloroethane	0.10	Not Detected	0.69	Not Detected
1,3,5-Trimethylbenzene	0.10	Not Detected	0.49	Not Detected
1,2,4-Trimethylbenzene	0.10	Not Detected	0.49	Not Detected
1,3-Dichlorobenzene	0.10	Not Detected	0.60	Not Detected
1,4-Dichlorobenzene	0.10	Not Detected	0.60	Not Detected
alpha-Chlorotoluene	0.10	Not Detected	0.52	Not Detected
1,2-Dichlorobenzene	0.10	Not Detected	0.60	Not Detected
Methylene Chloride	0.20	Not Detected	0.69	Not Detected
1,2,4-Trichlorobenzene	0.50	Not Detected	3.7	Not Detected
Hexachlorobutadiene	0.50	Not Detected	5.3	Not Detected
1,3-Butadiene	0.50	Not Detected	1.1	Not Detected
Acetone	0.50	0.24 J	1.2	0.57 J
Carbon Disulfide	0.50	Not Detected	1.6	Not Detected

AIR TOXICS LTD.

Client Sample ID: Lab Blank

Lab ID#: 0507550R1-07B

MODIFIED EPA METHOD TO-15 GC/MS FULL SCAN

File Name:	7080505	Date of Collection: NA
Dil. Factor:	1.00	Date of Analysis: 8/5/05 [illegible] PM

Compound	Rpt. Limit (ppbv)	Amount (ppbv)	Rpt. Limit (uG/m3)	Amount (uG/m3)
2-Propanol	0.50	0.14 J	1.2	0.33 J
trans-1,2-Dichloroethene	0.50	Not Detected	2.0	Not Detected
2-Butanone (Methyl Ethyl Ketone)	0.50	Not Detected	1.5	Not Detected
Hexane	0.50	Not Detected	1.8	Not Detected
Tetrahydrofuran	0.50	0.081 J	1.5	0.24 J
Cyclohexane	0.50	Not Detected	1.7	Not Detected
1,4-Dioxane	0.50	Not Detected	1.8	Not Detected
Bromodichloromethane	0.50	Not Detected	3.4	Not Detected
4-Methyl-2-pentanone	0.50	Not Detected	2.0	Not Detected
2-Hexanone	0.50	Not Detected	2.0	Not Detected
Dibromochloromethane	0.50	Not Detected	4.2	Not Detected
Bromoform	0.50	Not Detected	5.2	Not Detected
4-Ethyltoluene	0.50	Not Detected	2.4	Not Detected
Ethanol	0.50	Not Detected	0.94	Not Detected
Methyl tert-butyl ether	0.50	Not Detected	1.8	Not Detected
Heptane	0.50	Not Detected	2.0	Not Detected
Cumene	0.50	Not Detected	2.4	Not Detected
Propylbenzene	0.50	Not Detected	2.4	Not Detected
Naphthalene	0.50	0.28 J	2.6	1.5 J

J = Estimated value.

Container Type: NA - Not Applicable

Surrogates	%Recovery	Method Limits
1,2-Dichloroethane-d4	96	70-130
Toluene-d8	98	70-130
4-Bromofluorobenzene	103	70-130

AIR TOXICS LTD.

Client Sample ID: CCV

Lab ID#: 0507550R1-08A

MODIFIED EPA METHOD TO-15 GC/MS FULL SCAN

File Name: [illegible]	Date of Collection: NA
Dil. Factor: 1.00	Date of Analysis: 8/2/05 [illegible] PM

Compound	%Recovery
Freon 12	102
Freon 114	103
Chloromethane	97
Vinyl Chloride	103
Bromomethane	98
Chloroethane	96
Freon 11	100
1,1-Dichloroethene	104
Freon 113	99
1,1-Dichloroethane	101
cis-1,2-Dichloroethene	103
Chloroform	100
1,1,1-Trichloroethane	101
Carbon Tetrachloride	104
Benzene	94
1,2-Dichloroethane	103
Trichloroethene	103
1,2-Dichloropropane	103
cis-1,3-Dichloropropene	109
Toluene	102
trans-1,3-Dichloropropene	105
1,1,2-Trichloroethane	100
Tetrachloroethene	101
1,2-Dibromoethane (EDB)	103
Chlorobenzene	100
Ethyl Benzene	102
m,p-Xylene	106
o-Xylene	104
Styrene	110
1,1,2,2-Tetrachloroethane	104
1,3,5-Trimethylbenzene	103
1,2,4-Trimethylbenzene	106
1,3-Dichlorobenzene	103
1,4-Dichlorobenzene	102
alpha-Chlorotoluene	112
1,2-Dichlorobenzene	102
Methylene Chloride	95
1,2,4-Trichlorobenzene	94
Hexachlorobutadiene	96
1,3-Butadiene	98
Acetone	92
Carbon Disulfide	99

AIR TOXICS LTD.

Client Sample ID: CCV

Lab ID#: 0507550R1-08A

MODIFIED EPA METHOD TO-15 GC/MS FULL SCAN

File Name:	7080202	Date of Collection: NA
Dil. Factor:	1.00	Date of Analysis: 8/2/05 03:11 PM

Compound	%Recovery
2-Propanol	93
trans-1,2-Dichloroethene	103
2-Butanone (Methyl Ethyl Ketone)	102
Hexane	100
Tetrahydrofuran	97
Cyclohexane	99
1,4-Dioxane	104
Bromodichloromethane	103
4-Methyl-2-pentanone	106
2-Hexanone	105
Dibromochloromethane	103
Bromoform	108
4-Ethyltoluene	102
Ethanol	89
Methyl tert-butyl ether	101
Heptane	102
Cumene	101
Propylbenzene	101
Naphthalene	119

Container Type: NA - Not Applicable

Surrogates	%Recovery	Method Limits
1,2-Dichloroethane-d4	95	70-130
Toluene-d8	99	70-130
4-Bromofluorobenzene	106	70-130

AIR TOXICS LTD.

Client Sample ID: CCV

Lab ID#: 0507550R1-08B

MODIFIED EPA METHOD TO-15 GC/MS FULL SCAN

File Name:	7080302	Date of Collection: NA	
Dil. Factor:	1.00	Date of Analysis: 8/3/05 03:36 PM	

Compound	%Recovery
Freon 12	98
Freon 114	97
Chloromethane	94
Vinyl Chloride	98
Bromomethane	94
Chloroethane	89
Freon 11	97
1,1-Dichloroethene	97
Freon 113	95
1,1-Dichloroethane	96
cis-1,2-Dichloroethene	97
Chloroform	97
1,1,1-Trichloroethane	99
Carbon Tetrachloride	104
Benzene	91
1,2-Dichloroethane	102
Trichloroethene	99
1,2-Dichloropropane	99
cis-1,3-Dichloropropene	106
Toluene	100
trans-1,3-Dichloropropene	104
1,1,2-Trichloroethane	98
Tetrachloroethene	99
1,2-Dibromoethane (EDB)	102
Chlorobenzene	99
Ethyl Benzene	100
m,p-Xylene	103
o-Xylene	102
Styrene	108
1,1,2,2-Tetrachloroethane	104
1,3,5-Trimethylbenzene	102
1,2,4-Trimethylbenzene	103
1,3-Dichlorobenzene	100
1,4-Dichlorobenzene	100
alpha-Chlorotoluene	107
1,2-Dichlorobenzene	99
Methylene Chloride	90
1,2,4-Trichlorobenzene	102
Hexachlorobutadiene	101
1,3-Butadiene	93
Acetone	90
Carbon Disulfide	94

AIR TOXICS LTD.

Client Sample ID: CCV

Lab ID#: 0507550R1-08B

MODIFIED EPA METHOD TO-15 GC/MS FULL SCAN

File Name:	7080302	Date of Collection: NA
Dil. Factor:	1.00	Date of Analysis: 8/3/05 03:36 PM

Compound	%Recovery
2-Propanol	95
trans-1,2-Dichloroethene	98
2-Butanone (Methyl Ethyl Ketone)	94
Hexane	94
Tetrahydrofuran	93
Cyclohexane	94
1,4-Dioxane	98
Bromodichloromethane	101
4-Methyl-2-pentanone	104
2-Hexanone	102
Dibromochloromethane	104
Bromoform	109
4-Ethyltoluene	99
Ethanol	89
Methyl tert-butyl ether	95
Heptane	100
Cumene	99
Propylbenzene	98
Naphthalene	124

Container Type: NA - Not Applicable

Surrogates	%Recovery	Method Limits
1,2-Dichloroethane-d4	97	70-130
Toluene-d8	100	70-130
4-Bromofluorobenzene	108	70-130

AIR TOXICS LTD.

Client Sample ID: LCS

Lab ID#: 0507550R1-09A

MODIFIED EPA METHOD TO-15 GC/MS FULL SCAN

File Name:	7080203	Date of Collection: NA	
Dil. Factor:	1.00	Date of Analysis: 8/2/05 04:14 PM	

Compound	%Recovery
Freon 12	97
Freon 114	98
Chloromethane	93
Vinyl Chloride	96
Bromomethane	94
Chloroethane	82
Freon 11	97
1,1-Dichloroethene	99
Freon 113	97
1,1-Dichloroethane	92
cis-1,2-Dichloroethene	85
Chloroform	92
1,1,1-Trichloroethane	86
Carbon Tetrachloride	94
Benzene	82
1,2-Dichloroethane	90
Trichloroethene	91
1,2-Dichloropropane	86
cis-1,3-Dichloropropene	102
Toluene	98
trans-1,3-Dichloropropene	112
1,1,2-Trichloroethane	94
Tetrachloroethene	96
1,2-Dibromoethane (EDB)	96
Chlorobenzene	95
Ethyl Benzene	96
m,p-Xylene	101
o-Xylene	98
Styrene	139 Q
1,1,2,2-Tetrachloroethane	94
1,3,5-Trimethylbenzene	95
1,2,4-Trimethylbenzene	101
1,3-Dichlorobenzene	87
1,4-Dichlorobenzene	88
alpha-Chlorotoluene	81
1,2-Dichlorobenzene	88
Methylene Chloride	92
1,2,4-Trichlorobenzene	66 Q
Hexachlorobutadiene	65 Q
1,3-Butadiene	100
Acetone	95
Carbon Disulfide	102

AIR TOXICS LTD.

Client Sample ID: LCS

Lab ID#: 0507550R1-09A

MODIFIED EPA METHOD TO-15 GC/MS FULL SCAN

File Name:	7080203	Date of Collection: NA	
Dil. Factor:	1.00	Date of Analysis: 8/2/05 04:11 PM	

Compound	%Recovery
2-Propanol	117
trans-1,2-Dichloroethene	120
2-Butanone (Methyl Ethyl Ketone)	102
Hexane	100
Tetrahydrofuran	96
Cyclohexane	101
1,4-Dioxane	103
Bromodichloromethane	102
4-Methyl-2-pentanone	101
2-Hexanone	87
Dibromochloromethane	113
Bromoform	129
4-Ethyltoluene	88
Ethanol	87
Methyl tert-butyl ether	102
Heptane	105
Cumene	107
Propylbenzene	115
Naphthalene	Not Spiked

Q = Exceeds Quality Control limits.

Container Type: NA - Not Applicable

Surrogates	%Recovery	Method Limits
1,2-Dichloroethane-d4	95	70-130
Toluene-d8	101	70-130
4-Bromofluorobenzene	108	70-130

AIR TOXICS LTD.

Client Sample ID: LCS

Lab ID#: 0507550R1-09B

MODIFIED EPA METHOD TO-15 GC/MS FULL SCAN

File Name:	7080308	Date of Collection: NA	
Dil. Factor:	1.00	Date of Analysis:	8/3/05 04:31 PM

Compound	%Recovery
Freon 12	97
Freon 114	97
Chloromethane	94
Vinyl Chloride	95
Bromomethane	95
Chloroethane	82
Freon 11	97
1,1-Dichloroethene	97
Freon 113	95
1,1-Dichloroethane	92
cis-1,2-Dichloroethene	83
Chloroform	93
1,1,1-Trichloroethane	86
Carbon Tetrachloride	94
Benzene	82
1,2-Dichloroethane	90
Trichloroethene	90
1,2-Dichloropropane	85
cis-1,3-Dichloropropene	100
Toluene	96
trans-1,3-Dichloropropene	111
1,1,2-Trichloroethane	93
Tetrachloroethene	97
1,2-Dibromoethane (EDB)	97
Chlorobenzene	95
Ethyl Benzene	95
m,p-Xylene	101
o-Xylene	98
Styrene	140 Q
1,1,2,2-Tetrachloroethane	95
1,3,5-Trimethylbenzene	96
1,2,4-Trimethylbenzene	102
1,3-Dichlorobenzene	89
1,4-Dichlorobenzene	89
alpha-Chlorotoluene	81
1,2-Dichlorobenzene	90
Methylene Chloride	91
1,2,4-Trichlorobenzene	71
Hexachlorobutadiene	68 Q
1,3-Butadiene	100
Acetone	96
Carbon Disulfide	102

AIR TOXICS LTD.

Client Sample ID: LCS

Lab ID#: 0507550R1-09B

MODIFIED EPA METHOD TO-15 GC/MS FULL SCAN

File Name:	7080303	Date of Collection: NA	
Dil. Factor:	1.00	Date of Analysis: 8/3/05 04:31 PM	

Compound	%Recovery
2-Propanol	114
trans-1,2-Dichloroethene	120
2-Butanone (Methyl Ethyl Ketone)	100
Hexane	99
Tetrahydrofuran	97
Cyclohexane	100
1,4-Dioxane	102
Bromodichloromethane	104
4-Methyl-2-pentanone	101
2-Hexanone	87
Dibromochloromethane	113
Bromoform	131
4-Ethyltoluene	88
Ethanol	85
Methyl tert-butyl ether	100
Heptane	106
Cumene	107
Propylbenzene	116
Naphthalene	Not Spiked

Q = Exceeds Quality Control limits.

Container Type: NA - Not Applicable

Surrogates	%Recovery	Method Limits
1,2-Dichloroethane-d4	97	70-130
Toluene-d8	101	70-130
4-Bromofluorobenzene	109	70-130

this copy to [illegible]
file Doane Lake Project

September 10, 1993

Oregon

DEPARTMENT OF ENVIRONMENTAL QUALITY

CERTIFIED MAIL NO. P-915-445-841
RETURN RECEIPT REQUESTED

Notes 9/28/93
(1) Owner of property is Northwest Natural Gas Co.
(2) KII leases property since 12/~~28~~/88
(3) KCI operated on site prior to 12/29/88

Mr. John Oxford
Koppers Industries, Inc.
7540 NW St. Helens Road
Portland, OR 97210

Re: Koppers Co., Inc, Portland
ECSI ID # 84

Dear Mr. Oxford:

The Oregon Department of Environmental Quality (DEQ) has completed a Preliminary Assessment Equivalent (PAE) for the Northwest Natural Gas Co. site. As a lessee, your property at 7540 NW St. Helens Road is considered a part of the Northwest Natural Gas Co. site.

You should soon be receiving a copy of a letter that was sent to Northwest Natural Gas. As described in the letter, DEQ has determined that further sampling needs to be performed to characterize the extent of soil and groundwater contamination caused by the past disposal of coal tars by the predecessor company of Northwest Natural Gas. As part of its review of information in the Northwest Natural Gas site file, DEQ determined that a disposal pit exists on your property, into which waste streams of creosote and pitch were apparently dumped in the past. DEQ believes that further sampling is necessary in the pit area to determine if hazardous substances are present in concentrations that may pose a threat to human health or the environment.

Note KII does not own property

The DEQ looks to parties responsible under Oregon's Environmental Cleanup Law to undertake necessary action beyond the PAE. In general, persons who have owned or operated a site during the time releases of hazardous substances have occurred and persons who knew or should have known of the release when they purchased the property are strictly liable for investigation and cleanup costs. Persons who have caused or contributed to the release are similarly liable. Oregon's Environmental Cleanup Law, ORE 465.255, describes the liability provisions more specifically, including defenses allowed. If the DEQ conducts further investigation or remedial action, it may recover its remedial action costs against responsible parties. The DEQ may also require liable parties to undertake remedial action necessary to protect public health and the environment under ORS 465.260.

9/14/93

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To L. Flaherty	From Amos
Co. W. Tomen	Co.
Dept. FYI	Phone #
Fax #	Fax #

811 SW Sixth Avenue
Portland, OR 97204-1390
(503) 229-5696
TDD (503) 229-6993
DEQ-1

Persons potentially responsible for investigation and cleanup of a site have the following options for pursuing further action. They may:

- Request the DEQ to oversee further investigation or cleanup through its Voluntary Cleanup Program; or

- Wait until the DEQ notifies them of its intent to pursue further action at the site, determine responsibility at that time, and pursue the action required; or

- Pursue further action independently of the DEQ. The DEQ will review independent work in accordance with its priorities and may require additional action at the site. DEQ will track its cost in reviewing any site information and will seek to recover those costs against persons liable under ORS 465.255 if it determines that removal or remedial action is needed or was needed at the time DEQ made its recommendation for further action.

The DEQ strongly encourages persons to pursue action through the Voluntary Cleanup Program. Under any of these options, the DEQ will either require an agreement to pay its oversight costs as work proceeds or will track its costs and seek to recover them against responsible parties at a later date. The DEQ has determined that the disposal pit is a priority for further action, and unless we hear from you in the requested time period, we will contact you to proceed under the first or second of the listed options.

We appreciate your cooperation in addressing this site. Please let us know within 30 days of receipt of this letter whether you plan to proceed with further action at this site. I can be reached at (503) 229-5657. To discuss the Voluntary Cleanup Program, please contact Karla Urbanowicz, at (503) 229-6729.

Sincerely,

Heather Schijf

Heather Schijf, Coordinator
Site Assessment Section
Environmental Cleanup Division

KD:m
SA\SM5384
cc: Sandra Hart, Northwest Natural Gas Co.
Dick Bach, Stoel, Rives, Boley, etc.
Mary Wahl, ECD, DEQ
Mike Rosen, VCS, DEQ
Thomas Miller, SRS, DEQ
SAS file #84

Oregon

DEPARTMENT OF ENVIRONMENTAL QUALITY

September 10, 1993

CERTIFIED MAIL NO. P-915-447-128
RETURN RECEIPT REQUESTED

Ms. Sandra Hart
Northwest Natural Gas Co.
220 NW 2nd Ave.
Portland, OR 97209

Re: Northwest Natural Gas Co.
ECSI ID # 84

Dear Ms. Hart:

The Oregon Department of Environmental Quality (DEQ) has completed a Preliminary Assessment Equivalent (PAE) for the Northwest Natural Gas Co. site. In completing the PAE, the DEQ reviewed its file information on the site, including a 1987 federal Preliminary Assessment (PA). A Strategy Recommendation is included.

As noted in the Strategy Recommendation, the DEQ has determined that further action is required at this site to address releases of hazardous substances that threaten public health or the environment. Specifically, further sampling needs to be performed to characterize the extent of soil and groundwater contamination caused by the past disposal of coal tars by the Portland Gas & Coke Company. As described in the Strategy Recommendation, DEQ anticipates that the investigation will involve sampling on portions of the site currently leased to (1) Pacific Northern Oil Co. and (2) Koppers Industries, and on adjacent property owned by (3) Wacker Siltronic Corporation.

The DEQ looks to parties responsible under Oregon's Environmental Cleanup Law to undertake necessary action beyond the PAE. In general, persons who have owned or operated a site during the time releases of hazardous substances have occurred and persons who knew or should have known of the release when they purchased the property are strictly liable for investigation and cleanup costs. Persons who have caused or contributed to the release are similarly liable. Oregon's Environmental Cleanup Law, ORS 465.255, describes the liability provisions more specifically, including defenses allowed. If the DEQ conducts further investigation or remedial action, it may recover its remedial action costs against responsible parties. The DEQ may also require liable parties to undertake remedial action necessary to protect public health and the environment under ORS 465.260.

Persons potentially responsible for investigation and cleanup of a site have the following options for pursuing further action. They may:

- Request the DEQ to oversee further investigation or cleanup through its Voluntary Cleanup Program; or

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To L. Flaherty	From Amos	
Co.	Co.	
Dept. FYI	Phone #	
Fax #	Fax # 9/15/93	

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Portland, OR 97204-1390
(503) 229-5696
TDD (503) 229-6993
DEQ-1

Sandra Hart
September 10, 1993
Page 2

- Wait until the DEQ notifies them of its intent to pursue further action at the site, determine responsibility at that time, and pursue the action required; or

- Pursue further action independently of the DEQ. The DEQ will review independent work in accordance with its priorities and may require additional action at the site. DEQ will track its cost in reviewing any site information and will seek to recover those costs against persons liable under ORS 465.255 if it determines that removal or remedial action is needed or was needed at the time DEQ made its recommendation for further action.

The DEQ strongly encourages persons to pursue action through the Voluntary Cleanup Program. Under any of these options, the DEQ will either require an agreement to pay its oversight costs as work proceeds or will track its costs and seek to recover them against responsible parties at a later date. The DEQ has determined that this site is a priority for further action, and unless we hear from you in the requested time period, we will contact you to proceed under the first or second of the listed options.

The status of this site will be updated in our Environmental Cleanup Site Information (ECSI) database and the site recommended for listing on the DEQ's Confirmed Release List and Inventory of hazardous substances sites list pursuant to ORS 465.215 and 465.225 and OAR 340-122-430 and 440. A letter regarding listing will follow.

We appreciate your cooperation in addressing this site. Please let us know within 30 days of receipt of this letter whether you plan to proceed with further action at this site. I can be reached at (503) 229-5657. To discuss the Voluntary Cleanup Program, please contact Karla Urbanowicz, at (503) 229-6729.

Sincerely,

Heather Schijf

Heather Schijf, Coordinator
Site Assessment Section
Environmental Cleanup Division

KD:m
SA\SM5385
Enclosure: Strategy Recommendation
cc: John Oxford, Koppers Co., Inc.
Bob Saling, Pacific Northern Oil Co.
Rudolf Staudigl, Wacker Siltronic Corp.
Dick Bach, Stoel, Rives, Boley, etc.
Mary Wahl, ECD, DEQ
Mike Rosen, VCS, DEQ
Thomas Miller, SRS, DEQ
SAS file #84

DEQ SITE ASSESSMENT SECTION - STRATEGY RECOMMENDATION

Site Name: Northwest Natural Gas Co.

Site CERCLIS Number: 027734359

DEQ ECSI Number: 84

Site Address: 7540 NW St. Helens Road
Portland, OR 97210

Recommendation By: Kevin Dana, Environmental Specialist, Site Assessment Section

Approved By: Heather Schijf, HS Coordinator, Site Assessment Section

Date: June 7, 1993

Background:

There is conflicting information as to when operations began on-site. Apparently, Portland Gas and Coke Company purchased the site in the 1880's, and by 1913 had constructed a gasification plant. Portland Gas operated the plant until 1956, when it was transferred to Northwest Natural Gas Company. During this time, waste products from the gasification operations were deposited on-site. Until 1925, all waste products were discharged directly to the Willamette River. After 1925, tars were separated from the wastewater in settling ponds. A total of 30,000 cubic yards of coal tar accumulated in the ponds on the southern end of the property, near the shores of Doane Lake. 41,000 cubic yards of spent oxide were piled on the northern end of the property. Northwest Natural Gas razed most of the facilities in the late 1960's and built a liquified natural gas plant in their place. Five large above ground storage tanks were leased to Pacific Northern Oil Co. and used for oil storage, receiving, and distribution activities.

In 1965, the Koppers Company leased an eight acre portion of the site from Northwest Natural Gas and built a coal tar distillation plant. The distillation process produced oil, which was stored in an on-site tank farm. Waste streams of creosote and pitch were cooled and solidified in storage tanks, then apparently dumped into an on-site disposal pit. It is not precisely known how wastewater was disposed of. The plant operated until 1973, when it was shut down due to a lack of raw materials.

About this time, Northwest Natural Gas was sprucing up its property in preparation for building a substitute natural gas plant. (The plant was never constructed). Most of the spent oxide was hauled

incorrect! (as stated)

to the Scappoose landfill. The rest was mixed with overburden and used to cover the coal tar pits to a depth of about ten feet. (Part of Doane Lake was apparently also filled in). Northwest Natural Gas then sold this portion of the site to Wacker Siltronic Corporation, which built a plant on at least part of the fill. (See ECSI #183 for more information on the Wacker Siltronic site).

The Koppers plant reopened in 1974, producing experimental batches of "electrode pitch". About 1975, Koppers installed a rainwater collection and treatment system around the tank farm to comply with a permit condition. (Apparently, the company had an NPDES permit for its surface water runoff, since the water was funnelled into a ditch). The "treatment" system simply consisted of an oil/water separator. Koppers also began to discharge its industrial wastewaters to the sewers under permit. Since about 1977, the facility is believed to have only been used for the bulk transfer of creosote oil and coal tar pitch.

In 1982, DEQ sampled five groundwater monitoring wells that ringed Koppers' waste disposal site. The wells were sampled for phenols. One sample had 24 mg/l; the other four samples were all under 1 mg/l. DEQ performed more extensive groundwater sampling in 1984. The sampling found naphthalene (48 mg/l), acenaphthene (45 mg/l), fluorene (65 mg/l), phenanthrene (240 mg/l), anthracene (330 mg/l), fluoranthene (110 mg/l), pyrene (88 mg/l), lead (236 mg/l), and ethylbenzene (380 mg/l), all of which are well above SOCLEAN's groundwater standards. DEQ also sampled the sediment in a containment basin, and found similar contaminants (only benzo(a)pyrene (120 ppm) was at levels that violated SOCLEAN). It is unclear exactly where the containment basin is located.

??

Well samples

Camp Dresser & McKee, Inc. performed a "site characterization" in 1987, which incorporated the results of DEQ's sampling. (A copy of Camp Dresser's report was not in the file; however, a 1988 summary of the information by Tetra Tech was available). Also in 1987, Ecology and Environment (E&E) performed a Preliminary Assessment (PA) on the Koppers portion of the site for EPA. E&E recommended no further action under the federal Superfund, because the contamination was unlikely to affect human health. Because DEQ planned to conduct a study of area groundwater, EPA agreed to defer to state authority.

Did Danger [illegible]?

In 1990, DEQ signed a consent decree with the property owners in the Doane Lake area to study the area's groundwater contamination. The seven month study ended with a recommendation that the sites in the Doane Lake area be remediated separately. (See ECSI #36 for more information on the Doane Lake study).

Recommendation/Action:

The Site Assessment Section has reviewed file information relating to this site. Contamination at the site is extensive but does not pose an imminent threat to human health. The coal tars are buried under ten feet of fill, and groundwater in the area is not used for drinking. However, the contamination is apparently migrating, and may pose a threat to the environment. In May 1992, the Army Corps of Engineers found polynuclear aromatic hydrocarbons (PAHs) in the 5-20 ppm range in core samples in Willamette River sediments adjacent to the site. Site Assessment recommends that further sampling be performed to determine the extent of the soil and groundwater contamination. The Wacker Siltronic property should be included in this investigation. Because the known levels of groundwater contamination are so high, Site Assessment recommends that the sampling be given a high priority. Site Assessment also recommends that the site owner enter the Voluntary Cleanup Program. Finally, the site should be placed on the Confirmed Release List and the Inventory.

Why??

Referrals Within or Outside DEQ:

This site has not been referred to another division of DEQ or an outside regulatory agency. The Site Response Section was consulted regarding the disposition of this site.

Other:

This site is currently listed in DEQ's ECSI database under three filenames: Northwest Natural Gas Co. (ECSI #84); Koppers Company, Inc. - Portland (ECSI #62); and Pacific Northern Oil Co. (ECSI #396). The files will be combined under the filename Northwest Natural Gas Co. and updated with information contained in this decision document. The updated information will reflect Site Assessment's decision for further action at the site.

RECEIVED

SEP 15 1993

KOPPERS INDS., INC.
PORTLAND, OR

KOPPERS INDUSTRIES

INTEROFFICE CORRESPONDENCE

To: J. A. Oxford

Location: Northwest Terminal

Subject: Access to Property, ODEQ

From: W. E. Swearingen

Location: K-1800

Date: June 26, 1990

We have reviewed the "Consent for Access to Property" and the Doane Lake Consent Order with counsel, and have determined that it is advisable to sign the document and return it promptly to ODEQ.

Recall that ODEQ was advised by letter from Jill Blundon on June 2, 1990, that Beazer East, Inc. (BEI) had assumed liability, if any, for any environmental contamination that may have occurred before December 28, 1988. Although we are not a respondent in the Consent Order, we would like to cooperate with the agency in all environmental matters.

Please sign the enclosed "Consent for Access to Property" document and the cover letter to the agency and send it via certified mail to Sandra Anderson promptly. Make copies after you have signed them and send one to me and keep one for your files. Make extra copies of the cover letter only, and send a copy to the parties which were copied on the letter you received from ODEQ.

If you have any questions please call me.

WESwearingen

W. E. Swearingen

cc: J. R. Batchelder, K-1701
L. F. Flaherty, K-1750
Amos Kamerer, Northwest
K. S. Komoroski, DM&C

KOPPERS
INDUSTRIES

Koppers Industries, Inc.
436 Seventh Avenue
Pittsburgh, PA 15219-1800

Telephone: (412) 227-2001

June 26, 1990

Ms. Sandra Anderson, Project Manager
Site Response Section
Environmental Cleanup Division
Oregon, Department of Environmental Quality
8911 SW Sixth Avenue
Portland, Oregon 97204-1390

CERTIFIED MAIL
RETURN RECEIPT
REQUESTED

Re: Koppers Industries, Inc.
7540 NW St. Helens Road
Access to Property Request

Dear Ms. Anderson:

I am in receipt of your letter of June 12, 1990, in which ODEQ is requesting permission for access to our property for the purpose of installing and sampling a series of groundwater monitoring wells.

Although Koppers Industries, Inc. (KII) is not a respondent in Consent Order ECSR-NWR-89-3, the company wishes to cooperate fully with the agency regarding its investigation of the hydrogeological conditions of the Doane Lake Study Area.

Accordingly, I have signed the "Consent for Access to Property" agreement which you will find enclosed herewith.

Please keep me advised of the agency's intentions regarding any activity which may require access to our property.

Sincerely yours,

John A. Oxford
Plant Manager

cc: Claudia Powers, Lindsay, Hart, Neil & Weigler
Larry Edelman, DOJ
Tom Miller, SRS, DEQ

bcc: J. R. Batchelder, K-1701
L. F. Flaherty, K-1750
W. E. Swearingen, K-1801
Amos Kamerer, Northwest
K. S. Komoroski, DIckie, McCamey & Chilcote

KOPPERS

7540 N.W. St. Helens Rd.
Portland, Oregon 97210
(503) 286-3681

OCCUPATIONAL HEALTH & PRODUCT SAFETY
JUN 15 1990

To: Gary Flaherty, Bill Swearingen

I received a phone call from Sandra anderson, Project Manager Oregon D.E.Q on Friday June 8th. She informed me of the letter sent to Koppers Beazer asking them to give consent to come on the property. She said that Beazer replied that D.E.Q should ~~contact~~ Koppers Ind Inc. and that she would now direct this consent letter to me.

Regards,
John Oxford
JOHN A. OXFORD

Bill Swearingen KID 84

LAW OFFICES OF
DICKIE, MCCAMEY & CHILCOTE
A PROFESSIONAL CORPORATION

SUITE 400
TWO PPG PLACE
PITTSBURGH, PA
15222-5402

TEL. 412/281-7272

FAX. 412/392-5367

OCCUPATIONAL HEALTH & PRODUCT SAFETY
JUN 22 1990

RECEIVED
JUN 20 1990

David B. Fawcett
David J. Armstrong
Richard D. Klaber
Theodore O. Struk
Herman C. Kimpel
Wilbur McCoy Otto
Clayton A. Sweeney
Herbert Bennett Conner
Richard S. Dorfzaun
Daniel P. Stefko
James F. Malone, III
M. Richard Dunlap
Eugene F. Scanlon, Jr.
Charles W. Kenrick
John Edward Wall
James R. Miller
Paul W. Roman, Jr.
Joseph S. D. Christof, II
Stewart M. Flam
Stuart W. Benson, III
Thomas P. Lutz
J. Lawson Johnston
Susan K. Wright
Stephen R. Mlinac
David M. Neuhart
George E. McGrann
Robert F. Wagner
Robert W. Hastings
Robert J. Marino
Stephen M. Houghton
Larry A. Silverman
Arthur L. Schwarzwaelder
Frank M. Gianola
Leonard A. Costa, Jr.
Kenneth S. Mroz
Steven B. Larchuk
James D. Strader
Ingrid Medzius Lundberg
Frederick W. Bode, III
Jeffrey T. Wiley
Richard C. Polley
Christine A. Ward
Stephen C. Kifer
Thomas M. Fallert
Gloria N. Fuehrer
William D. Clifford
Robert G. DelGreco, Jr.
Judith F. Olson
Edmund L. Olszewski, Jr.
Dorothy A. Davis
Charles G. Brown
Richard J. Federowicz
John C. Conti
Jean McCree Simmonds
Nancy R. Winschel
L. John Argento
Lu Ann Datesh
David J. Obermeier
Peter T. Stinson
Thomas H. May
Leland P. Schermer
Ray F. Middleman
George Monroe Schumann
John W. Lewis, II
Anthony J. Williott
George P. Kachulis
John T. Pion
Hunter A. McGeary, Jr.
George Randal Fox, III
Michael J. Sweeney
William M. Conwell
Diane J. Christel
Bonnie P. Webster
Gregory A. Gross
Joseph L. Luvara
Andrew G. Kimball
W. Alan Torrance, Jr.
Howard A. Chajson
Marcelle M. Theis
Brian T. Must
David S. Bloom
M. Suzanne McCartney
Kenneth S. Komoroski
Alyson J. Kirleis
S. Jane Anderson
John C. Carlos
W. Scott Campbell
William M. Thomson
Paul S. Mazeski
Harry F. Kunselman
Anthony J. Rash
Peter A. Santos
Christopher Passodelis, Jr.
Kimberly G. Roberts

Of Counsel
J. Lawrence McBride

June 20, 1990 DIRECT DIAL: 392-5401

W. E. Swearingen
Environmental Program Manager
Tar & Coke
KOPPERS INDUSTRIES, INC.
436 Seventh Avenue
Pittsburgh, PA 15219

Bill — We need to cc BEI on actions relating to NW Terminal issues — B

RE: KII Northwest Terminal
Our File No.: 00001

Dear Bill:

We have reviewed the correspondence, Consent for Access to Property form and Consent Order which you provided to us. You asked us to review this matter and to recommend a course of action that KII should pursue with the ODEQ that will not jeopardize the protection afforded to KII under the Asset Purchase Agreement.

As we understand the situation, contamination at the Northwest Terminal, if it exists, is the result of practices engaged in by the former owner, Beazer East, Inc., or by geographically proximate operations. Thus, as we understand the situation, ultimate liability for contamination would be Beazer's and/or third parties.

At this time, the letter from the ODEQ merely requests that KII review and sign the "Consent for Accees to Property" form related to investigation of the terminal property and nearby properties. We have reviewed the Access Agreement and we recommend that it be promptly signed and returned to ODEQ on or before ODEQ's July 1, 1990 deadline.

As you requested, we noted the several particular items that have specific relevance to the KII leased property. As you point out, on page 4 of the Consent Order, KII is listed as having not responded to or declined to participate in the Consent Order. Since KII is not a party to the Consent Order, KII has no right or

STOEL RIVES BOLEY
JONES & GREY
ATTORNEYS AT LAW
SUITE 2300
STANDARD INSURANCE CENTER
900 SW FIFTH AVENUE
PORTLAND, OREGON 97204-1268
Telephone (503) 224-3380
Telecopier (503) 220-2480
Cable Lawport
Telex 703455
Writer's Direct Dial Number
(503) 294-9213

File
Portland

January 25, 1989

Mr. Tom Miller
Environmental Cleanup Division
Oregon Department of
Environmental Quality
811 SW Sixth Avenue
Portland, OR 97204

Dear Tom:

Enclosed herewith is a copy of a letter, dated January 19, 1989, from Marvin B. Durning, Esq. as legal counsel to Wacker Siltronic Corporation.

As we indicated to you at our meeting on January 19, 1989, the members of the industry group have expressed reservations about proceeding with an expanded groundwater study at the Doane Lake area without the active participation of all the parties identified by DEQ. Needless to say, Mr. Durning's letter is of concern to the other members of the industry group.

Very truly yours,

Dick

Richard D. Bach

RDB:twa
Enclosure
cc: Marvin B. Durning, Esq.
Industry Group Distribution List (w/enclosure)

RDB80002

JAN 27 1989

NL/GOULD EXPANDED GROUNDWATER STUDY
INDUSTRY GROUP DISTRIBUTION LIST

January 1989

MR. ROGER NEU
MR. TOM ZELENKA
(SCHNITZER INVESTMENT CORP.)

MR. EDMUND BOLIN
ROBERT JOHNSON, ESQ.
(NORTHWEST NATURAL GAS COMPANY)

RICHARD D. BACH, ESQ.
(STOEL RIVES BOLEY JONES & GREY FOR NORTHWEST NATURAL GAS AND SCHNITZER)

KEN MCCAW, ESQ.
(ESCO)

JOE DARRELL, ESQ.
(THELEN, MARRIN FOR ESCO)

JAMES C. BROWN, ESQ.
(BOGLE & GATES FOR ESCO)

MR. JOHN OXFORD
(KOPPERS COMPANY, INC.

DAVID N. SIMON
(LIQUID AIR CORP.)

DAVID WALDSCHMIDT, ESQ.
(PACIFIC NORTHERN OIL)

BILLIE NOLAN
(KOPPERS COMPANY, INC.)

MARVIN DURNING, ESQ.
MR. JOHN PITTMAN
(WACKER SILTRONIC)

MR. RICHARD F. GITSCHLAG
MR. ROBERT L. FERGUSON
WILLIAM N. FARRAN, ESQ.
(RHONE-POULENC INC.)

JAMES E. BENEDICT, ESQ.
(SCHWABE, WILLIAMSON & WYATT FOR RHONE-POULENC)

MR. LARRY PATTERSON
MR. MICHAEL SCHU
(PENWALT CORPORATION)

CLAUDIA POWERS, ESQ.
(LINDSAY, HART FOR PENWALT)

JANET D. SMITH, ESQ.
MR. JAY YOUNG
(NL INDUSTRIES)

STEVEN OSTER, ESQ.
(WILLKIE, FARR & GALLAGHER FOR NL INDUSTRIES)

MR. JIM GIBBS
MICHAEL VEYSEY, ESQ.
(GOULD, INC.)

RDBP0004

MARVIN B. DURNING A PROFESSIONAL SERVICE CORPORATION LAW OFFICES
1411 FOURTH AVENUE BUILDING, SUITE 1522, SEATTLE, WASHINGTON 98101-2212 TELEPHONE (206) 223-9616 TELECOPY (206) 223-9617

GERARDO A. CARLO, OF COUNSEL
ADMITTED IN PUERTO RICO
AND DISTRICT OF COLUMBIA

MARVIN B. DURNING, OF COUNSEL
CARLO & DUBOS
SAN JUAN, PUERTO RICO

January 19, 1989

Richard Bach, Esq.
Stoel, Rives, Boley, Jones, & Grey
Suite 2300
900 S.W. Fifth Avenue
Portland, Oregon 97204

Re: Wacker Siltronic Corporation - NL/Gould
Federal Superfund Site - Doane Lake Area

Dear Mr. Bach:

Wacker Siltronic Corporation has asked me to write to you and to the other parties interested in the NL/Gould Federal Superfund Site and Doane Lake Area in northwest Portland, Oregon to advise you of Wacker Siltronic's position concerning any remedial action costs connected with those areas.

As you know, Wacker Siltronic Corporation owns property on which its silicon wafer plant is constructed, at 7200 N.W. Front Avenue in the Doane Lake area of northwest Portland. Because of its ownership of this property, Wacker Siltronic has been involved with the U.S. Environmental Protection Agency, Region X (EPA), and the Oregon Department of Environmental Quality (DEQ) concerning a further investigation of "the groundwater unit" of the NL/Gould Federal Superfund site desired by EPA and a Doane Lake Study desired by DEQ. Recent efforts by DEQ/EPA to negotiate an Oregon Consent Order to carry out this further remedial investigation have required that Wacker Siltronic clarify its legal liability, if any, for remedial action costs associated with the NL/Gould site and Doane Lake area.

A careful review of the facts and of governing law indicates that Wacker Siltronic has no legal responsibility to pay any of the costs of the above-mentioned further remedial investigation nor any other remedial action costs pertaining to the site or area. Wacker Siltronic Corporation purchased its property in October, 1978 from the City of Portland as part of a cooperative urban renewal and job development effort. At the time of the purchase, Wacker Siltronic made appropriate inquiries and neither knew nor reasonably should have known of any contamination of hazardous substances in or on the property. Any hazardous substances coming to the property after the purchase came by migration from other property not owned by Wacker Siltronic, and all hazardous substances of concern at the property came there by acts or omissions of third parties not connected in any way with Wacker Siltronic. For all these reasons, and others, Wacker Siltronic

RECEIVED

1-23-89

MARVIN B. DURNING
A PROFESSIONAL SERVICE CORPORATION

is not a responsible party under either federal or Oregon law; rather, it is an innocent victim of the contamination.

Over the past few years, Wacker Siltronic has cooperated with EPA and DEQ and with other interested parties concerning its property, and has already made very substantial expenditures on studies, tests, monitoring, reports, staff time, legal and other consulting costs because of the contamination discovered at its property. In view of the fact that the Company has no legal liability for the contamination, it has advised DEQ (and will advise EPA) that it will not sign the proposed Consent Order and will not share in the further remedial investigation costs nor for other remedial action costs. In addition, Wacker Siltronic reserves its right to reimbursement of its expenditures (and other damages, if any) from responsible parties or other sources as the law may provide.

Although Wacker Siltronic will not be a party to the proposed Oregon Consent Order, it will continue to cooperate with EPA, DEQ, and other interested parties by providing access to its property, under appropriate safeguards, if such access is needed for the further remedial investigation.

We trust this letter makes clear Wacker Siltronic Corporation's position and that this clarification will assist you in determining your company's or your client's course of action. We are sending a letter similar to this one to the other interested parties of the NL/Gould Federal Superfund site and Doane Lake area.

Very truly yours,

Marvin B. Durning

Marvin B. Durning

MBD:bg
cc: John Pittman, Director of Engineering
Wacker Siltronic Corporation

(A7)0117.2

File
Portland

NL

COPY SENT TO

Date: 1-30-89

Initials: RD Bach

January 26, 1989

Richard D. Bach, Esq.
Stoel, Rives, Boley, Jones & Grey
Suite 2300
Standard Insurance Center
900 S.W. Fifth Avenue
Portland, OR 97204

Re: <u>Doane Lake Groundwater Investigation Scope of Work</u>

Dear Mr. Bach:

We have again reviewed your proposed scope of work. In contrast to the Tetra Tech scope of work, your January 19, 1989 proposal for the "NL/Gould Superfund Site Groundwater Investigation", does not appear to provide the information which we think will be required to satisfy EPA. In anticipation, we are enclosing a revised form of your proposal. We believe the revised proposal uses the basic framework you have outlined and at the same time, addresses the data gaps and issues identified by Tetra Tech.

At this time, we also wish to confirm the terms under which NL will participate in the Doane Lake study.

First, DEQ confirmed at last week's meeting that the data EPA needs is basically of two types: (1) the impact of contaminants generated by others in the area on the proposed groundwater remediation at the Gould site, and (2) general Doane Lake area hydrogeology. As to the former, there is no basis for attributing such costs to NL. As to the latter, Sandy Anderson, of DEQ, stated that each PRP would have to undertake this work at some time in order to discharge its individual Oregon Superfund duties. The conduct of the Gould site RI/FS has affected only the timing of this work. There is therefore no basis to allocate to NL a disproportionate share of the costs in undertaking either the Tetra Tech or a PRP-generated scope of work.

Second, NL has spent approximately $1.5 million studying the Gould site with further commitments of $2.25 million to USEPA for remedial actions. NL has, <u>inter alia</u>, generated data which, according to Bill Renfroe, of the Oregon DEQ, will be "invaluable" to the other PRPs in studying their own sites. Any allocation of costs must therefore take into account the considerable resources NL has already expended.

NL Industries, Inc.
Environmental Control Department
P.O. Box 1090, Hightstown, N.J. 08520 Tel. (609) 443-2407

1-30-89

Richard D. Bach
January 26, 1989
Page -2-

Provided that no unreasonable demands are made upon it, NL looks forward to working with the group. Should you have any questions, please call me at your convenience.

Very truly yours,

Jay F. Young
Principal Environmental Engineer

JFY/lmp
enclosure

cc: Bill Renfroe

Doane Lake Groundwater Investigation
(Counter Proposal to Doane Lake Group Plan)

Phase I*

1. Purpose:

   To develop and implement a Scope of Work for the hydrogeological investigation of the Doane Lake area which is directed to characterize the degree of hydraulic connection between the listed sites within this area.

2. Objectives:

   To characterize the hydrogeology of the area in order to enable preparation of present and future remedial designs in the Doane Lake area.

3. Scope of Work:

   Phase I - The hydrogeologic investigation will include the following:

   1) Review and analyze the 104(e) responses and other existing data available to the DEQ, EPA and group members.

   2) An analysis of the hydrogeology of the area sites (surface, shallow and deep) groundwater aquifer(s) to determine the degree of hydraulic interconnection between the respective sites.

   3) Identify hydrogeological data gaps to be addressed in order to complete the analysis.

   4) If sufficient existing data are available, the hydrogeological study will produce an area characterization such that, to the extent possible, the combined effects of present and future groundwater remediation programs may be predicted.

   5) If data gaps indicate that additional hydrogeological information is required, the consultant will recommend additional activities to acquire that data. This recommendation may include one or more of the wells proposed in the Tetra Tech report.

   6) Obtain hydrogeological data recommended by consultant.

*Phase II could represent chemical characterization; note that these programs should be concurrent.

Phase II (If Necessary)

1. Purpose:

To characterize the chemical nature and extent of contamination at each site within the Doane Lake area.

2. Objective:

To develop a chemical characterization of the affected aquifer(s) in the Doane Lake area and identify areas of mutual interest between the listed sites in the area.

3. Scope of Work (General Sketch)

    1. Review and analyze existing data, etc.
    2. Access needs for additional data.
    3. Delay sampling plans if required.
    4. Determine QA/QC, H & S
    5. Provide QA/QC/H&S protocols
    6. Perform monitoring and analysis.

File Portland

EPA

Region 10
1200 Sixth Avenue
Seattle WA 98101

Alaska
Idaho
Oregon
Washington

May 9, 1989

Superfund Fact Sheet

Gould Superfund Site
Portland, Oregon

Public Comment Period on Consent Decree From:
May 3, 1989 to June 2, 1989

EPA Invites you to a public meeting on the Consent Decree

May 17, 1989
7:00 to 9:30 pm
NW Service Center
1819 NW Everett
Portland, Oregon

On April 14, 1989 a Consent Decree was lodged by the Department of Justice with the Federal District Court in Portland, Oregon. This Consent Decree is a settlement agreement between NL Industries, Inc. (NL) and the U.S. Environmental Protection Agency (EPA). The U.S. Department of Justice is representing EPA in this matter.

The Consent Decree outlines the responsibilities of NL in performing predesign studies and partially implementing the clean up remedy at the Gould Superfund site in Portland, Oregon. The public is encouraged to review and comment on this Consent Decree. Written comments should be mailed to:

Linda Anderson
Environmental Enforcement Section
Department of Justice
P.O. Box 7611 Ben Franklin Station
Washington, D.C. 20044

These comments must be postmarked by June 2, 1989 to be included in the package for the court.

EPA will be hosting a public meeting to talk about the Consent Decree for the NL/Gould Superfund site. We will be taking public comment at the meeting which will be presented to the judge along with written comments received. This fact sheet gives an overview of the key points of the Consent Decree. Copies of the Consent Decree are available for your review at the following locations:

U.S. Environmental Protection Agency Oregon Operations Office 811 S.W. Sixth Avenue, 3rd Floor **Portland, Oregon**	**Linnton Community Center** 10614 NW St. Helens Rd **Portland, Oregon**

The administrative record for the site has been moved. This complete legal record is available at the EPA, Oregon Operations Office listed above.

What is in the Consent Decree?

The Decree with NL requires the company to perform a series of design studies to evaluate several aspects of the cleanup remedy, as described in the Record of Decision. This design work will be required before the remedy can be implemented. EPA's intent is to design a process that will minimize the amount of material requiring disposal in a hazardous waste landfill. The design work will consist of a phased series of studies to:

- Determine what parts of the casing left on the site can be recycled and then determine how much of the material will be recycled.
- Determine the process to separate the casing components that will minimize the amount of dust created.
- Determine the modifications required to adapt existing separation technology to conditions at the Gould site.
- Determine the best way to treat contaminated the soils, sediment and matte.

If at the end of the studies EPA determines that the results are successful, NL will be required to implement the remedy. NL's financial obligation is limited to $2.25 million under this agreement. At that point EPA will also be negotiating with NL and any other PRP's for an amendment to the Consent Decree to complete the work for the contaminated soils and battery casings at this site.

Work Schedule

Initial sampling and testing for the predesign studies began in February 1989. If the predesign studies are successful, construction of the remedy is expected to begin in the spring of 1990. Construction should be completed by the spring of 1991. The constructed treatment plant will the operate for about six years.

Questions about the site can be directed to:

David Tetta, Site Manager		Bob Goodstein
U.S. Environmental Protection Agency		U.S. Environmental Protection Agency
1200 Sixth Avenue (HW-113)	or	1200 Sixth Avenue (SO-125)
Seattle, Washington 98101		Seattle, Washington 98101
(206) 442-2138		(206) 442-8311

EPA
United States
Environmental Protection
Agency

Region 10 (HW-113-RO)
1200 Sixth Avenue
Seattle WA 98101

TO J M Blandon

FROM H/Bottenfield

File Portland

SUBJECT Portland / Dorne Lake

DATE

FOLD— MESSAGE

Per our discussion, attached are additional letters received at Portland relating to Dorne Lake PRPs. Don [illegible] is not attending or participating. He continues to be contacted. A letter to remove KII as the contact

ORIGINATOR-DO NOT WRITE BELOW THIS LINE REPLY TO → SIGNED

REPLY

would be helpful and appreciated. Thanks

Bob

cc LFF

DATE

SIGNED

DETACH AND RETAIN THIS COPY

File Portland

RDB
DRAFT
5-26-89

[TO BE SENT ON BEHALF OF DOANE LAKE INDUSTRY GROUP]

May 26, 1989

Mr. Fred Hansen, Director
Oregon Department of
Environmental Quality
811 SW Sixth Avenue
Portland, OR 97204

Dear Mr. Hansen:

On behalf of Gould, Inc., NL Industries, ESCO Corporation, Northwest Natural Gas Company, Pacific Northern Oil Company, Pennwalt Corp., Rhone-Poulenc Ag Company and Schnitzer Investment Corp. (the "Doane Lake Industry Group"), we would like to express the Industry Group's collective dismay with your letter of May 23, 1989.

The Industry Group has consistently indicated its willingness to investigate the regional hydrogeology of the Doane Lake area to the extent that they may have a joint responsibility to respond to groundwater contamination of the aquifer. In its letter of intent delivered to you on March 31, 1989, the Industry Group made a clear commitment to address the data gaps identified by EPA and to negotiate in good faith toward an acceptable consent order. Since that date the Industry Group has retained the services of a consultant and has prepared a scope of work that could be the basis for developing a work plan for attachment to the consent order. In addition, we are in the process of developing a steering committee in order that the Industry Group will have a structural vehicle for future negotiations with your Department.

RDBP0046

In view of the foregoing, all of which has been communicated to your staff on a regular (albeit informal) basis, we are at a loss to understand your dissatisfaction with the progress of our negotiations. It is true that we have agreed to "address" rather than to "fill" the EPA data gaps--but only because the Industry Group and its consultant are convinced that many of the data gaps identified by Tetra-Tech simply do not need to be "filled" in order to develop the information necessary to this phase of the investigations.

We trust that you and EPA will keep in mind that ESCO, Schnitzer, Northern Pacific Oil, Rhone-Poulenc, Pennwalt and Northwest Natural Gas are not liable for lead contamination of the groundwater caused by migration of the lead plume to their properties, and are not interested in funding a study to be used to design a remedial action for that groundwater lead contamination. They are prepared, however, in concert with NL Industries and Gould, to investigate the extent to which any contamination for which they may be liable will interrelate with the lead plume--and we fail to understand why that should not be acceptable to your staff or to EPA.

Simply stated, the Industry Group--as a group--is prepared to discharge the joint obligations of its members; but none of them is prepared to assume the sole obligations of any of the others. And while the Industry Group understands that joint and several liability might be a valid legal concept under some circumstances, it is not clear that joint and several liability is appropriate in this case. We respectfully submit that the proposed study will assist in identifying the relationships of the parties and that you cannot expect the Industry Group, at this time, to agree to assume responsibilities for which their liabilities are uncertain.

Be that as it may, the Industry Group continues to be willing to work with you and your staff to develop a work plan to address the EPA data gaps and to enter into a consent order to implement that work plan. Whether or not this can be accomplished by August 31, 1989 will be very much dependent

Oregon Department of
Environmental Quality
May 26, 1989
Page 3

upon the willingness of your staff to understand the Industry Group position and to be reasonable in its negotiations.

Very truly yours,

DOANE LAKE INDUSTRY GROUP

By: ____________________

cc: Ms. Sandra Anderson - DEQ
Larry Edelman, Esq. - DOJ
Mr. Al Goodman - EPA
Mr. Ed Woods - DEQ
Ms. Beverly Thacker-Morgan - DEQ
Doane Lake Industry Group Mailing List

RDSP0046

File
Portland

NL

February 2, 1989

Mr. John Oxford
Koppers Company, Inc.
7540 NW St. Helens Road
Portland, OR 97229

Dear Mr. Oxford:

As indicated during our conference call with Doane Lake Committee on January 30, 1989, we are enclosing a copy of our correspondence with R.D. Bach for your information.

Very truly yours,

Jay F. Young

Jay F. Young
Principal Environmental Engineer

JFY/lmp
enclosure

NL Industries, Inc.
Environmental Control Department
P.O. Box 1090, Hightstown, N.J. 08520 Tel. (609) 443-

Phase II (If Necessary)

1. Purpose:

To characterize the chemical nature and extent of contamination at each site within the Doane Lake area.

2. Objective:

To develop a chemical characterization of the affected aquifer(s) in the Doane Lake area and identify areas of mutual interest between the listed sites in the area.

3. Scope of Work (General Sketch)

   1. Review and analyze existing data, etc.
   2. Access needs for additional data.
   3. Delay sampling plans if required.
   4. Determine QA/QC, H & S
   5. Provide QA/QC/H&S protocols
   6. Perform monitoring and analysis.

Richard D. Bach
January 26, 1989
Page -2-

Provided that no unreasonable demands are made upon it, NL looks forward to working with the group. Should you have any questions, please call me at your convenience.

Very truly yours,

Jay F. Young
Principal Environmental Engineer

JFY/lmp
enclosure

cc: Bill Renfroe

Doane Lake Groundwater Investigation
(Counter Proposal to Doane Lake Group Plan)

Phase I*

1. Purpose:

   To develop and implement a Scope of Work for the hydrogeological investigation of the Doane Lake area which is directed to characterize the degree of hydraulic connection between the listed sites within this area.

2. Objectives:

   To characterize the hydrogeology of the area in order to enable preparation of present and future remedial designs in the Doane Lake area.

3. Scope of Work:

   Phase I - The hydrogeologic investigation will include the following:

   1) Review and analyze the 104(e) responses and other existing data available to the DEQ, EPA and group members.

   2) An analysis of the hydrogeology of the area sites (surface, shallow and deep) groundwater aquifer(s) to determine the degree of hydraulic interconnection between the respective sites.

   3) Identify hydrogeological data gaps to be addressed in order to complete the analysis.

   4) If sufficient existing data are available, the hydrogeological study will produce an area characterization such that, to the extent possible, the combined effects of present and future groundwater remediation programs may be predicted.

   5) If data gaps indicate that additional hydrogeological information is required, the consultant will recommend additional activities to acquire that data. This recommendation may include one or more of the wells proposed in the Tetra Tech report.

   6) Obtain hydrogeological data recommended by consultant.

*Phase II could represent chemical characterization; note that these programs should be concurrent.

LAND NO.011 002

2/7/90
from LFF
Doane Lake Project

Companies hire expert to track contamination

Eight companies in the Northwest Portland industrial district have hired a soil and ground-water expert to track contamination on their properties between Northwest St. Helens Road and Front Avenue.

The eight signed a voluntary consent order with the state Department of Environmental Quality to complete the work, department spokeswoman Carolyn Young said Friday. They must give the department a preliminary work plan in March.

The eight companies are ESCO Corp.; Gould Inc.; NL Industries Inc.; Northwest Natural Gas Co.; Pacific Northern Oil Co.; Pennwalt Corp.; Rhone-Poulenc Inc.'s agrochemical division; and Schnitzer Investment Corp.

The companies own land on the remnants of Doane Lake, which has been filled in over the decades. Young said industries have operated in the area since the early 1900s.

During the past 10 years, Young said, other ground-water studies in the area have turned up pesticides, heavy metals, solvents, petroleum products, alkaline wastes and coal-tar derivatives.

In addition to signing the group consent order, Young said, Rhone-Poulenc signed a separate order to investigate contamination on its property at 6200 N.W. St. Helens Road. It will give DEQ a draft work plan later in February.

Pesticides were made on the site starting in the 1940s. The company has made herbicides on St. Helens Road since 1956.

Rhone-Poulenc has done earlier studies showing soil, surface water and ground water on its property contain organic compounds used to make herbicides. Young said the company has started cleaning up shallow ground water.

The companies have hired Geraghty and Miller, an environmental consulting firm, to do the pollution studies, said Doug Yocum, spokesman for Northwest Natural Gas Co. He said his company continues as a landlord in the area where it operated a gas-making plant from 1913 to 1957.

NEIL GOLDSCHMIDT
GOVERNOR

Department of Environmental Quality

811 SW SIXTH AVENUE, PORTLAND, OREGON 97204-1390 PHONE (503) 229-5696

June 12, 1990

CERTIFIED MAIL NO. P-915-446-903
RETURN RECEIPT REQUESTED

Mr. John Oxford
Koppers Industries, Inc.
7540 N. W. St. Helens Road
Portland, OR 97210

Dear Mr. Oxford:

Pursuant to an Order on Consent (copy attached), a preliminary investigation to determine the nature and extent of groundwater contamination in the Doane Lake industrial area is being conducted by certain private parties who have facilities located in the area.

To carry out the investigation as required, access to your property at 7540 N. W. St. Helens Road, Portland, Oregon may be required for the purpose of installing monitoring wells, sampling existing monitoring wells, measuring water elevations, evaluating wells and/or sampling from wells.

The Department of Environmental Quality is arranging for access to private properties pursuant to its authority -- ORS 465.250(2) and ORS 465.260 -- in the area so that the investigation may proceed expeditiously.

A "Consent for Access to Property" form is enclosed for your review and signature.

Please review and sign the form and return it to me by July 1, 1990.

If you have any questions regarding the form or the investigation, please do not hesitate to call me at (503) 229-6744.

Thank you very much for your cooperation in facilitating this important investigation.

Sincerely,

Sandra Anderson

Sandra Anderson, Project Manager
Site Response Section
Environmental Cleanup Division

SA:m
SITE\SM3083
Enclosures
cc: Claudia Powers, Lindsay, Hart, Neil & Weigler
Larry Edelman, DOJ
Tom Miller, SRS, DEQ

CONSENT FOR ACCESS TO PROPERTY

Name: Koppers Industries, Inc.

Address of Property: 7540 N. W. St. Helens Road

Portland, Oregon 97210

I hereby give my consent and permission to the extent of whatever possessory interest I may have in the property and premises described above (the "property"), and appurtenances thereto, to officers, employees, agents, authorized representatives, and the persons and their contractors acting pursuant to Order by the Oregon Department of Environmental Quality (DEQ) to enter my property for the limited purpose of installing groundwater monitoring wells, sampling existing wells, measuring water elevations, evaluating wells and/or sampling from wells.

Such entry shall be during working hours and after reasonable advance notice and subject to such reasonable conditions as may be required to protect my or my company's property or proprietary interests and minimize disruption of activities, if any, at the property.

I recognize that these actions are undertaken pursuant to an Order on Consent under ORS 465.260.

This written permission is given by me voluntarily with knowledge of my right to refuse and without threats or promises of any kind. I understand that by consenting to access, I neither incur any liability nor waive any rights not otherwise provided for under applicable law.

By: ________________________________

Name

____

Title

____

Date

OCCUPATIONAL HEALTH
& PRODUCT SAFETY
JUN 18 1990

STATE OF OREGON

DEPARTMENT OF ENVIRONMENTAL QUALITY

In the Matter of:	) DEQ NO. ECSR-NWR-89-13
ESCO Corporation;	) ORDER ON CONSENT
Gould, Inc.;	)
NL Industries, Inc.;	)
Northwest Natural Gas Company;	)
Pacific Northern Oil Company;	)
Pennwalt Corporation;	)
Rhone-Poulenc AG Company; and	)
Schnitzer Investment Corp.,	)
Respondents.	)

Pursuant to ORS 466.570(4), the Director, Oregon Department of Environmental Quality (DEQ), issues this Order on Consent ("Consent Order") to ESCO Corporation; Gould, Inc.; NL Industries, Inc.; Northwest Natural Gas Company; Pacific Northern Oil Company; Pennwalt Corporation; Rhone-Poulenc AG Company; and Schnitzer Investment Corp. (collectively, Respondents). This Consent Order contains the following provisions:

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Koppers021410

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1. Purpose.

The mutual objective of DEQ and Respondents is to implement the Scope of Work ("SOW"), attached to and incorporated by reference into this Consent Order, as Attachment A. This investigation outlined in the SOW is necessary to evaluate the hydrogeological conditions in the Doane Lake Study Area ("Study Area") and the interrelationships between remediation, if any, of groundwater at the Gould, Inc. Superfund site and hydrogeological conditions underlying Respondents' sites in the Study Area.

2. Stipulations.

Respondents and DEQ consent and agree:

(A) To issuance of this Consent Order;

(B) To perform and comply with all provisions of this Consent Order;

(C) To not challenge DEQ's jurisdiction to issue and enforce this Consent Order;

(D) To waive any right Respondents might have to seek judicial or administrative review of this Consent Order prior to commencement of action by DEQ to enforce any of the provisions hereof.

(E) That this Consent Order shall not be admissible in any administrative or judicial action except an action to enforce any of its terms.

(F) That Respondents' rights and duties under this Consent Order shall not be subject to any rules adopted under ORS 466.553 subsequent to issuance of this Consent Order.

(G) To not litigate, in any proceeding brought by DEQ to enforce this Consent Order or to assess penalties for noncompliance with this Consent Order, any issue other than Respondents' compliance with this Consent Order;

(H) To not assert, in any proceeding brought by DEQ to enforce this Consent Order or to assess penalties for noncompliance with this Consent Order, that performance of an interim remedial action or removal measure under this Consent Order by Respondents discharges Respondents' duty to fully perform all remaining provisions of this Consent Order.

3. Findings of Fact.

DEQ makes the following findings without admission of any such facts by Respondents:

A. Respondents are Oregon Corporations or are foreign corporations that are now doing business in the State of Oregon, or are foreign corporations that formerly did business in the State of Oregon so as to render them subject to the jurisdiction of the courts of this state.

B. ESCO Corporation owns and operated a site at 6900 N. W. Front Avenue, Portland, Oregon.

Gould, Inc. owns and operated a site at 5909 N. W. 61st Street, Portland, Oregon.

NL Industries, Inc. owned and operated a site at 5909 N. W. 61st Street, Portland, Oregon.

Northwest Natural Gas Company owns and operated a site at 7900 N. W. St. Helens Road, Portland, Oregon.

Pacific Northern Oil Company operates a site at 7900 N. W. St. Helens Road, Portland, Oregon.

Pennwalt Corporation owns and operates a site at 6400 N. W. Front Avenue, Portland, Oregon.

Rhone-Poulenc AG Company owns and operates a site at 6200 N. W. St. Helens Road, Portland, Oregon.

Schnitzer Investment Corporation owns and operated a site at 6501 N. W. Front Avenue, Portland, Oregon.

Attachment B, attached to and incorporated by reference into this Consent Order, is a site diagram indicating the relative location of the sites of each of the Respondents.

C. The DEQ finds that there has been a release or a threat of release into the environment of hazardous substances at the Study Area.

D. In addition to the parties who are signatories to this Agreement, DEQ has notified the following entities that they may be liable parties pursuant to ORS 466.567 for conduct of activities addressed in this Order on Consent:

Wacker-Siltronic Corporation
Liquid Air Corporation
Koppers Industries, Inc.

These entities have declined or have not responded to requests by DEQ that they participate in this Order on Consent. DEQ reserves all legal rights and remedies with respect to these nonsettling entities and this Order on Consent shall not relieve any of them from any liability they may have under applicable state, federal, or common law.

4. Conclusions of Law and Determinations.

Based on the above Findings of Fact DEQ determines, without admission of any such determinations by Respondents and without waiver of Respondents' rights to challenge such finding of fact or determinations in any proceedings other than one brought by DEQ to enforce the provisions of this Consent Order that:

A. Each Respondent is a "person" under ORS 466.540(13).

B. Each Respondent's property is a "site" under OAR 340-122-020.

C. The presence of hazardous substances in the ground water in the Doane Lake Area constitutes a "release" or threat of "release" into the environment under ORS 466.540(14).

D. The activities required by this Consent Order are necessary to protect public health, safety, welfare and the environment.

Based on the above Stipulations, Findings of Fact, and Conclusions of Law and Determinations, DEQ ORDERS:

5. Work to be Performed.

A. Scope of Work.

Within 60 days of issuance of this Consent Order, Respondents shall submit for DEQ review and comment, a Work Plan to implement the Scope of Work (SOW), Attachment A. Respondents shall commence implementation of the Work Plan within 30 days of approval of the Work Plan by DEQ.

B. Reports.

Respondents shall submit reports that document all activities completed under the Work Plan and shall be submitted in accordance with the schedule in the Work Plan.

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C. Monthly Status Reports.

Respondents shall submit monthly status reports to DEQ outlining activities conducted during the past month and activities planned for the upcoming month, and including a summary of data results received during the previous month.

6. Public Participation.

Upon issuance of this Consent Order, DEQ will provide public notice of this Consent Order through, at least but not limited to, a press release to local paper(s) of general circulation describing the activities to be performed by Respondents under this Consent Order; provided, however, Respondents shall have received a draft of the press release or other communication prepared for distribution to the public at least five (5) working days before issuance of the release, and DEQ will consider in good faith any comments by Respondents on any release prior to issuance. Copies of the Consent Order will be made available to the public.

7. General Provisions.

A. Respondents' Access.

Each Respondent shall be responsible for obtaining in a timely fashion access to such Respondent's site and other property in its possession and control as is necessary to carry out the requirements of this Consent Order. This Consent Order does not convey any rights of access to Respondents. With respect to any other premises where work is reasonably necessary to carry out the requirements of this Consent Order, which premises is not under the ownership or control of Respondents or any one of them, DEQ shall use its best efforts to obtain access to such premises so as to enable Respondents to fully perform the requirements of this Consent Order.

B. DEQ Access and Oversight.

(1) Upon reasonable prior notice and during normal business hours each Respondent shall allow DEQ to enter and move freely about portions of such Respondent's property only as necessary for, and only as related directly to, this Consent Order, which may include to the extent related directly to the work under this Consent Order: (a) observing Respondents' progress in implementing this Consent Order; (b) conducting such tests and taking such samples as DEQ deems necessary; (c) verifying data submitted to DEQ by Respondents; (d) using camera, sound recording, or other recording equipment. To accommodate Respondents' proprietary concerns the DEQ will allow Respondents' personnel to operate the camera, sound or other recording devices so long as the DEQ is satisfied that the manner and content of the photographs and recordings are accurate and provide all information appropriately sought by the DEQ. Respondents shall permit DEQ to inspect and copy all records, files, photographs, documents, and data relating to work under this Consent Order, except that Respondents shall not be required to permit DEQ inspection or copying of items subject to attorney-client and attorney work product privileges.

(2) DEQ employees, agents, or contractors, when on any Respondent's premises, shall abide by all reasonable and customary safety procedures and protocols established by the Respondent and shall use their best efforts to avoid disruption of a Respondent's normal business or production activities.

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Koppers021416

C. Project Coordinators. All reports, notices, and other communications required under or relating to this Consent Order shall be directed to:

DEQ Project Coordinator:	Respondents' Steering Committee Chairperson:
Sandra Anderson Environmental Cleanup Division Department of Environmental Quality 811 Southwest Sixth Avenue Portland, Oregon 97204 (503) 229-6744 FAX: (503) 229-6124	Claudia K. Powers Lindsay, Hart, Neil and Weigler Suite 1800 222 S. W. Columbia Portland, Oregon 97201-6618 (503) 226-1191 FAX: (503) 226-0079

D. Notice and Samples.

Respondents shall make every reasonable attempt to notify DEQ of any excavation, drilling, or sampling to be conducted under this Consent Order at least five (5) working days prior to such activity but in no event less than twenty-four (24) hours prior to such activity unless otherwise agreed or in an emergency situation. Upon DEQ's oral request, confirmed in writing as soon as practicable, Respondents shall provide DEQ with a split or duplicate of any sample taken pursuant to this Consent Order. In the event DEQ conducts any sampling or analysis in connection with this Consent Order, DEQ shall notify Respondents of any excavation, drilling, or sampling at least five (5) working days prior to such activity but in no event less than twenty-four (24) hours prior to such activity. Upon Respondents' oral request, DEQ shall provide Respondents with a split or duplicate of any samples taken in connection with this Consent Order and promptly shall provide Respondents with copies of all analytical data for such samples.

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E. Quality Assurance.

Respondents shall conduct all sampling, sample transports, and sample analysis in accordance with the Quality Assurance/Quality Control ("QA/QC") provisions submitted to DEQ pursuant to the Work Plan. Respondents shall ensure that each laboratory used by Respondents for analysis performs such analyses in accordance with such provisions. In the event DEQ conducts any sampling or analysis in connection with this Consent Order, DEQ shall conduct such sampling, sample transport, and sample analysis in accordance with Quality Assurance/Quality Control guidance established and published by DEQ or the United States Environmental Protection Agency and shall provide Respondents with documentation demonstrating compliance with such guidance.

F. Records.

(1) Submission upon request.

In addition to those reports and documents specifically required under this Consent Order, Respondents shall provide to DEQ within ten (10) days of DEQ's written request copies of QA/QC memoranda and audits, data which have undergone QA/QC review, final plans, reports, directions to contractors, field logs, laboratory analytical reports, and any other documents that relate directly to the work under this Consent Order except to the extent that any such other documents are subject to any attorney-client or attorney work product privileges.

(2) Preservation.

Each Respondent shall preserve all records and documents in the possession or control of Respondent or its respective employees, agents, or contractors that relate directly to activities under this Consent Order for at least five (5) years after the last certification of completion under Section 8 of this Consent Order. Except as exempted under subsection (1) of this Section F and upon DEQ's request, a Respondent shall provide copies of such records to DEQ.

(3) Confidentiality.

Any Respondent may assert a claim of confidentiality regarding any documents, records or information submitted to or compiled by DEQ pursuant to this Consent Order. DEQ shall treat documents, records and information for which a claim of confidentiality has been made in accordance with ORS 192.410 through 192.505. If a Respondent does not make a claim of confidentiality at the time the documents, records or information are submitted to or copied by DEQ, the documents, records or information may be made available to the public without notice to the Respondent.

G. Other Applicable Laws.

All actions under this Consent Order shall be performed in accordance with all applicable federal, state, and local laws and regulations; provided, in accordance with ORS 466.573, any on-site activities hereunder may be exempted from any applicable requirements of ORS 466.005 through 466.350 and ORS Chapters 459 and 468.

H. Reimbursement of DEQ Oversight Costs.

Until completion of work to be performed under this Consent Order, DEQ shall accrue costs incurred after issuance of this Order by DEQ or the State of Oregon in connection with any activities related to oversight of this Order.

Oversight costs to be accrued shall include both direct and indirect costs. Direct costs include direct labor costs, site specific expenses, DEQ contractor or legal costs, and any other costs related to DEQ oversight of this

Order. The indirect cost rate shall be the rate charged by DEQ on federal agreements. That rate will vary as the rate charged on federal agreements varies.

DEQ reserves the right to seek reimbursement of any costs incurred by the state in connection with oversight activities related to this Consent Order from any person(s) who may be liable for such costs under ORS 466.567 or other applicable law. Nothing contained herein shall be a finding or an admission that Respondents are so liable.

I. Force Majeure.

(1) If any event occurs that is beyond Respondents' reasonable control and that causes or might cause, in whole or in part, a delay or deviation in performance of the requirements of this Consent Order, Respondents shall promptly notify DEQ's Project Coordinator orally of the cause of the delay or deviation and its anticipated duration, the measures that have been or will be taken to prevent or minimize the delay or deviation, and the timetable by which Respondents propose to carry out such measures. Respondents shall confirm in writing this information within five (5) working days of the oral notification.

(2) If Respondents demonstrate to DEQ that the delay or deviation has been or will be caused, in whole or in part, by circumstances beyond the control and despite the due diligence of Respondents, DEQ shall extend times for performance of related activities under this Consent Order as appropriate. Circumstances or events beyond Respondents' control include but are not limited to acts of God, strikes or work stoppages, fire, explosion, riot, sabotage, war, or DEQ's inability to gain access to any property pursuant to section 7(A) of this Consent Order. Increased cost of performance, or changed business or

economic circumstances, shall be presumed not to be circumstances beyond Respondents' control.

J. <u>DEQ Approvals</u>.

(1) Where DEQ review and approval is required for any plan or activity under the Work Plan under this Consent Order, Respondents shall not proceed with the plan or activity until DEQ written approval is received. DEQ approval shall not be unreasonably withheld. DEQ shall make every good faith attempt to respond to the plan or activity submittal within thirty (30) days of receipt of the submittal with either an approval or disapproval. If limited resources or other agency priorities prevent DEQ from responding within thirty (30) days, DEQ shall notify Respondents. Such approval shall not be required for activities undertaken individually by a Respondent on its property and not as implementation of the Work Plan under this Consent Order. Any delay in granting or denying approval shall correspondingly extend the time for completion by Respondents of that activity and each successive related activity.

(2) In the event of disagreement between Respondents and DEQ regarding review and approval of a plan or activity, or regarding interpretation of data, Respondents and DEQ shall provide each other their respective positions in writing regarding the disputed matter and shall make a good faith effort to resolve any disagreement including face-to-face meetings. In the event DEQ and Respondents cannot resolve the disagreement by this method, DEQ and Respondents may upon mutual agreement select a mutually acceptable, qualified, and neutral fact-finder. A party that declines to agree to a neutral fact-finder shall provide the other party a written statement of the reasons for declining to submit the disputed issue to a fact-finder. The

DEQ's act of declining submittal of a disputed matter to a neutral fact-finder shall not be considered a final agency action for purposes of judicial review. The fees and expenses of the fact-finder shall be borne equally by DEQ and Respondents and DEQ's costs so incurred shall not be subject to reimbursement as an oversight cost.

(3) Within twenty (20) working days after selection of the fact-finder, DEQ and Respondents shall jointly provide the fact-finder an agreed-upon statement of the precise nature of the dispute and a copy of the procedures to be followed by the fact-finder as set forth in this subsection. Within the same twenty (20) day period, DEQ and Respondents shall provide the fact-finder (with copies to each other) their respective positions regarding the dispute and the rationale, information, and documents supporting such position.

(4). Within thirty (30) days of the parties' submittals, or within other such time period as agreed to by the parties and the fact-finder, the fact-finder shall provide DEQ and Respondents a written advisory report setting forth the fact-finder's determination regarding the dispute. DEQ shall consider the advisory report in making a final decision regarding the disputed matter. The advisory report shall not be binding on DEQ; provided, the advisory report shall be admissible in any action commenced by DEQ to enforce this Consent Order or to assess penalties regarding the disputed matter.

(5) Invocation of this dispute resolution procedure shall extend the time for completion by Respondents of the activity subject to dispute and each successive related activity. Any final decision by DEQ regarding a disputed matter shall be provided to Respondents in writing and shall be an

enforceable part of this Consent Order.

K. Stipulated Penalties.

Upon any unexcused violation by Respondents of any provision of this Consent Order, and upon Respondents' receipt from DEQ of written notice of violation, Respondents shall, if the violation continues after ten (10) days from receipt of such notice, pay the stipulated penalties set forth in the following schedule:

(1) Five hundred dollars ($500.00) for the first week of violation or delay and one thousand dollars ($1,000.00) per day of violation or delay thereafter, for:

(a) failure to submit a revised final work plan in accordance with the schedule in Attachment A of this Consent Order; (b) failure to complete the work in accordance with the schedule in the approved work plan; or

(c) failure to submit a revised final report in accordance with the schedule in Attachment A of this Consent Order;

(2) Five hundred dollars ($500.00) for the first week of violation or delay and one thousand dollars ($1,000.00) per day of violation or delay thereafter, for:

(a) failure to submit a draft Work Plan in accordance with the Schedule in Attachment A of this Consent Order;

(b) failure to commence the work in accordance with the schedule in the approved Work Plan; or

(c) failure to submit draft report in accordance with the schedule in the approved Work Plan.

///

(3) A Respondent shall pay the sum of two thousand five hundred dollars ($2,500.00) for failure to provide access to its property pursuant to Section 7.B.

(4) Notwithstanding Subsections (1) and (2) of this Section 7(K), stipulated penalties for violations of these subsections, if any, shall not be payable until completion of the work under this Order; provided however, if Respondents complete all work in accordance with final dates of completion in accordance with schedules set out in the Work Plan as amended from time to time, all penalties will be excused.

Respondents shall pay, within thirty (30) days of receipt of a written notice of violation from DEQ, the amount of such stipulated penalty by check made payable to the State of Oregon.

L. Enforcement of Consent Order and Reservation of Rights.

(1) In addition to stipulated penalties provided under Section 7.K., DEQ reserves the right to seek injunctive relief or such other equitable relief other than administrative penalties as may be necessary to enforce the provisions of this Consent Order and/or to protect public health, safety, welfare, and the environment. From the effective date of this Consent Order, for as long as the terms herein and any modifications thereto are complied with, DEQ agrees not to sue or take any administrative action against the Respondents, or any of them, their agents, assigns, and successors for the work required under this Consent Order. Nothing herein shall be deemed to grant any rights to persons or entities not a party to the Consent Order, and DEQ and Respondents reserve all rights against such persons or entities;

(2) Respondents do not admit any liability, violation of law, or factual or legal finding, conclusion, or determination made by DEQ under this

Consent Order.

(3) Nothing in this Consent Order shall prevent Respondents from exercising any rights of contribution or indemnification Respondents might have against any person regarding activities under this Consent Order.

M. Disclaimer of Liability.

Notwithstanding any approvals which may be granted by DEQ, the State shall not be liable by virtue of this Consent Order for any injuries or damages to persons or property resulting from any acts or omissions of the Respondents, their officers, employees, agents, receivers, trustees, successors, assigns, contractors, subcontractors, or any other person acting on their behalf, in carrying out any activities pursuant to this Consent Order. Neither Respondents, nor any of them, shall be liable by virtue of this Consent Order for any injuries or damages to persons or property resulting from any acts or omissions of DEQ, its employees, agents, contractors or subcontractors or any other person acting in DEQ's behalf, in carrying out any activities pursuant to this Consent Order. This disclaimer shall not abrogate any claims which the parties might otherwise have under common law or statute.

N. Other Claims.

Nothing in this Consent Order shall constitute or be construed as a release from any claim, cause of action, or demand in law or equity against any person, firm, partnership, corporation, or other entity not a signatory to this Consent Order for any liability it may have arising out of or in any way relating to the generation, treatment, storage, handling, transportation, release or disposal of any hazardous substance, hazardous waste, solid waste, pollutant, or contamination present on, at, beneath, near, or migrating from, taken to, or taken from any site identified in Section 3. above.

O. Non-Admission.

Respondents do not admit any of the Findings of Fact, Conclusions of Law and Determinations herein, and reserve any and all rights and defenses which they may have, individually and jointly, regarding liability or responsibility in any subsequent proceedings concerning the Doane Lake Area or any other site.

P. Parties Bound.

This Consent Order shall be binding on the parties, and their respective successors, agents, and assigns. No change in ownership or corporate or partnership status shall in any way alter a Respondent's obligations under this Consent Order unless otherwise approved by DEQ and the other Respondents in writing, which approval shall not be unreasonably withheld. Each Respondent shall also be under an affirmative duty for the duration of this Consent Order to notify and provide a copy of this Consent Order to any prospective successor, purchaser, lessee or assignee of its site.

Q. Modification.

DEQ and Respondents may modify this Consent Order by mutual written agreement.

8. Notice and Certification of Completion.

Upon completion of the work to be performed pursuant to Section 5 of this Consent Order, Respondents shall submit to DEQ a written notice of completion and request for certification of completion in accordance with ORS 466.577(10), which certification shall not be unreasonably withheld. This Consent Order shall be deemed satisfied and terminated upon such certification.

9. <u>Signatures</u>.

STIPULATED, AGREED, and APPROVED for issuance:

Respondents

ESCO CORPORATION

By: ______________________________ Date: ______________
(Name)

____
(Title)

GOULD, INC.

By: ______________________________ Date: ______________
(Name)

____
(Title)

NL INDUSTRIES, INC.

By: ______________________________ Date: ______________
(Name)

____
(Title)

NORTHWEST NATURAL GAS COMPANY

By: ______________________________ Date: ______________
(Name)

____
(Title)

9. Signatures.

STIPULATED, AGREED, and APPROVED for issuance:

Respondents

ESCO CORPORATION

By: ______________________________ Date: ______________
(Name)

____
(Title)

GOULD, INC.

By: ______________________________ Date: ______________
(Name)

____
(Title)

NL INDUSTRIES, INC.

By: Janet D Smith Date: 12/14/89
(Name)

Associate General Counsel
(Title)

NORTHWEST NATURAL GAS COMPANY

By: ______________________________ Date: ______________
(Name)

____
(Title)

9. Signatures.

STIPULATED, AGREED, and APPROVED for issuance:

Respondents

ESCO CORPORATION

By: ______________________________ Date: ________________
(Name)

____
(Title)

GOULD, INC.

By: ______________________________ Date: ________________
(Name)

____
(Title)

NL INDUSTRIES, INC.

By: ______________________________ Date: ________________
(Name)

____
(Title)

NORTHWEST NATURAL GAS COMPANY

By: Bruce R. DeBolt Date: 19 Dec 89
(Name)

Sr Vice President
(Title)

9. Signatures.

STIPULATED, AGREED, and APPROVED for issuance:

Respondents

ESCO CORPORATION

By: [signature] Date: 12/15/89
(Name)

President-Proprietary Products group
(Title)

GOULD, INC.

By: ______________________ Date: ______________
(Name)

____
(Title)

NL INDUSTRIES, INC.

By: ______________________ Date: ______________
(Name)

____
(Title)

NORTHWEST NATURAL GAS COMPANY

By: ______________________ Date: ______________
(Name)

____
(Title)

9. Signatures.

STIPULATED, AGREED, and APPROVED for issuance:

Respondents

ESCO CORPORATION

By: ______________________________ Date: ________________
(Name)

____
(Title)

GOULD, INC.

By: [signature] Date: 12/18/89
(Name)

VP-GENERAL COUNSEL
(Title) + SECRETARY

NL INDUSTRIES, INC.

By: ______________________________ Date: ________________
(Name)

____
(Title)

NORTHWEST NATURAL GAS COMPANY

By: ______________________________ Date: ________________
(Name)

____
(Title)

PACIFIC NORTHERN OIL COMPANY

By: ______________________________ Date: ______________
(Name)

____
(Title)

PENNWALT CORPORATION

By: ______________________________ Date: ______________
(Name)

____
(Title)

J.C.

RHONE-POULENC AG COMPANY

By: N. C. Robinds Date: 12/18/89
(Name)

Vice-President & General Manager, Operations
(Title)

SCHNITZER INVESTMENT CORP.

By: ______________________________ Date: ______________
(Name)

____
(Title)

STIPULATED, AGREED, and so ORDERED:

State of Oregon
Department of Environmental Quality

By: Fred Hansen Date: JAN 10 1990
Fred Hansen
Director

PACIFIC NORTHERN OIL COMPANY

By: ______________________________ Date: ______________
(Name)

____
(Title)

PENNWALT CORPORATION

By: ______________________________ Date: ______________
(Name)

____
(Title)

RHONE-POULENC AG COMPANY

By: ______________________________ Date: ______________
(Name)

____
(Title)

SCHNITZER INVESTMENT CORP.

By: ______________________________ Date: 12-13-89
(Name)

Vice Pres.
(Title)

STIPULATED, AGREED, and so ORDERED:

State of Oregon
Department of Environmental Quality

By: Fred Hansen Date: JAN 10 1990
Fred Hansen
Director

PACIFIC NORTHERN OIL COMPANY

By: David A. Waldschmidt Date: 12-14-89
(Name)

Gen. Counsel
(Title)

PENNWALT CORPORATION

By: ______________________ Date: ______________
(Name)

____
(Title)

RHONE-POULENC AG COMPANY

By: ______________________ Date: ______________
(Name)

____
(Title)

SCHNITZER INVESTMENT CORP.

By: ______________________ Date: ______________
(Name)

____
(Title)

STIPULATED, AGREED, and so ORDERED:

State of Oregon
Department of Environmental Quality

By: Fred Hansen Date: JAN 10 1990
Fred Hansen
Director

PACIFIC NORTHERN OIL COMPANY

By: ______________________________ Date: ______________
(Name)

____
(Title)

PENNWALT CORPORATION

By: Edward L Locke Date: 12-13-89
(Name)

Plant Manager
(Title)

RHONE-POULENC AG COMPANY

By: ______________________________ Date: ______________
(Name)

____
(Title)

SCHNITZER INVESTMENT CORP.

By: ______________________________ Date: ______________
(Name)

____
(Title)

STIPULATED, AGREED, and so ORDERED:

State of Oregon
Department of Environmental Quality

By: Fred Hansen Date: JAN 10 1990
Fred Hansen
Director

SCOPE OF WORK

The following scope of work is designed to address hydrogeologic data gaps identified in Geraghty & Miller, Inc.'s report entitled "Phase I Hydrogeological Investigation: Assessment of Existing Conditions", dated November 1, 1989 (the Report); the Oregon Department of Environmental Quality's (ODEQ's) comments in response to the Report as set out in Ms. Sandra Anderson's November 9, 1989 letter to the Doane Lake Industrial Group and Geraghty & Miller; the U.S. Environmental Protection Agency's (EPA's) comments in response to the Report as set out in Mr. David Tetta's November 8, 1989 letter to Ms. Sandra Anderson; Geraghty & Miller and the Doane Lake Industrial Group's comments in response to ODEQ and EPA as set out in Geraghty & Miller's November 17, 1989 and December 1, 1989 letters to Ms. Sandra Anderson; and ODEQ's oral comments presented during the course of meetings held to discuss the Report. The objectives of the proposed hydrogeological investigation in the Doane Lake Area are to determine hydrologic conditions in the vicinity of the Gould Superfund site, determine the zone of influence of potential remedial activities, and determine the impact that ground-water quality in the Doane Lake Area could have on potential Gould site remedies.

Work Plan Preparation

A detailed work plan describing the activities outlined below under Field Activities and Reporting Activities will be submitted to the Oregon Department of Environmental Quality (ODEQ) for approval, within sixty (60) days of issuance of the Order on Consent. The work plan will be prepared in accordance with guidelines established in "Guidance for Conducting Remedial Investigations and Feasibility Studies Under CERCLA", EPA/540/G-87/004 (OSWER Directive 9355.3-01), 1988, and OAR 340-122-080. The work plan will include: a brief summary of conclusions from Geraghty & Miller's report of existing conditions; a detailed account of proposed investigative activities to include drilling methods, monitoring well construction details, well development, sampling procedures, and pumping test procedures; a schedule for all proposed activities and submittals; and a description of qualifications of personnel to be involved in the project. Appendices to the work plan will include a Sampling and Analysis Plan and Health and Safety Plan.

All sampling and analytical procedures will be established prior to initiating the investigation in a sampling and analysis plan (SAP). The purpose of the SAP is to establish routine procedures for collecting and analyzing data to ensure that data obtained during the investigation are reliable. The SAP will be composed of a field sampling plan (FSP) and a quality assurance program plan (QAPP), and will include a discussion of collection methods, quality control procedures, sample containers, chain-of-custody procedures, analytical methods, and detection level goals. The SAP will be prepared in accordance with the following guidance documents: " Data Quality Objectives for Remedial Response Activities", EPA/540/G-87/004f (OSWER Directive 9355.0-7B), March, 1987; "Test Methods for Evaluating Solid Waste", SW-846; "A Compendium of Superfund Field Operations Methods", EPA/540/P-87/001 (OSWER Directive 9355.0-14), December, 1987; and

"Guidelines and Specifications for Preparing Quality Assurance Program Plans", QAMS-004/80, 1980.

A site specific health and safety plan will be prepared for review by all field personnel prior to conducting any on-site field work. The plan will describe known hazards in the area and recommend the level of protective clothing and equipment to be used by field technicians. Equipment and personal decontamination procedures will be described in the health and safety plan as well. Local medical, fire and enforcement agency numbers and addresses will be included for quick referral during an emergency situation.

Field Activities

The following field activities will be performed in order to obtain data which are necessary to meet the objectives of the proposed investigation.

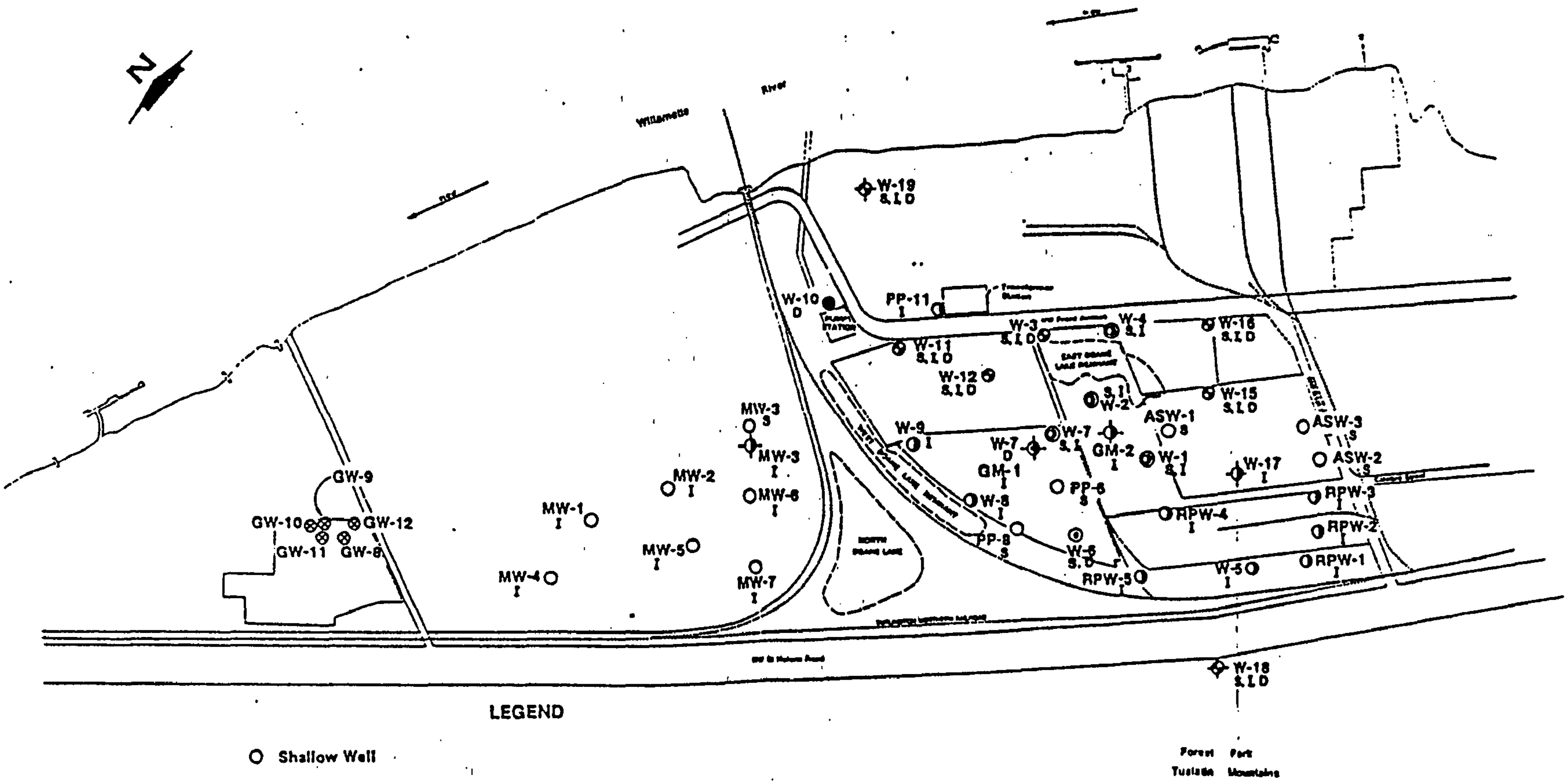
- Install eleven new monitoring wells in the Doane Lake Area. Three of the new wells will be installed down gradient from the Gould site near the Willamette River and will be completed as shallow, intermediate and deep wells (W-19 S, I and D). Another triple completion well nest (W-18 S, I and D) will be installed up gradient of the Rhône-Poulenc property near NW St Helens Road. Four intermediate wells will be installed in the Doane Lake Area. Two of the wells will serve as pumping wells and be located near monitoring well sites W-7 (GM-1 I) and W-2 (GM-2 I). Of the remaining two intermediate wells one (W-17 I) will be installed on the southwest side of the American Steel property and the other (MW-3 I) will be installed near MW-3 S on the Wacker property. One deep well (W-7 D) will be installed near W-7. All of the wells will be installed in compliance with ODEQ's "Guidelines for Monitoring Well Design, Installation, Testing, Decommissioning and Record Keeping". Refer to Figure 1 for proposed well locations.

- Resurvey all new and existing monitoring well tops in the Doane Lake Area to tie the well network into a common datum.

- Collect water-level measurements from all of the monitoring wells and surface water bodies in the Study Area on a monthly basis for six months.

- Collect continuous ground-water level data in two of the wells in the south Doane Lake Area by installing continuous water-level recorders. The recorders will remain in place for one month.

- Conduct slug tests in the newly installed wells, to integrate hydraulic data from the new wells with the existing data base.



LEGEND

- ○ Shallow Well
- ◑ Intermediate Well
- ● Deep Well
- Nested Well (Shallow/Intermediate)
- Nested Well (Shallow/Deep)
- Nested Well (Shallow/Intermediate/Deep)
- Nested Well (Intermediate/Deep)
- ⊗ Groundwater Recovery Well
- Proposed Well Location

0 300 600 900

Approximate Scale in Feet

Note: S, I and D following well designations indicate shallow, intermediate and deep screened horizons.

GERAGHTY & MILLER, INC.
Environmental Services

PROPOSED MONITORING WELL LOCATION MAP

Doane Lake Area
Portland, Oregon

DRAWN	APPROVED	DATE	PROJECT NUMBER	FIGURE
SAC	aa✗	Nov. 1989	WA06301	1

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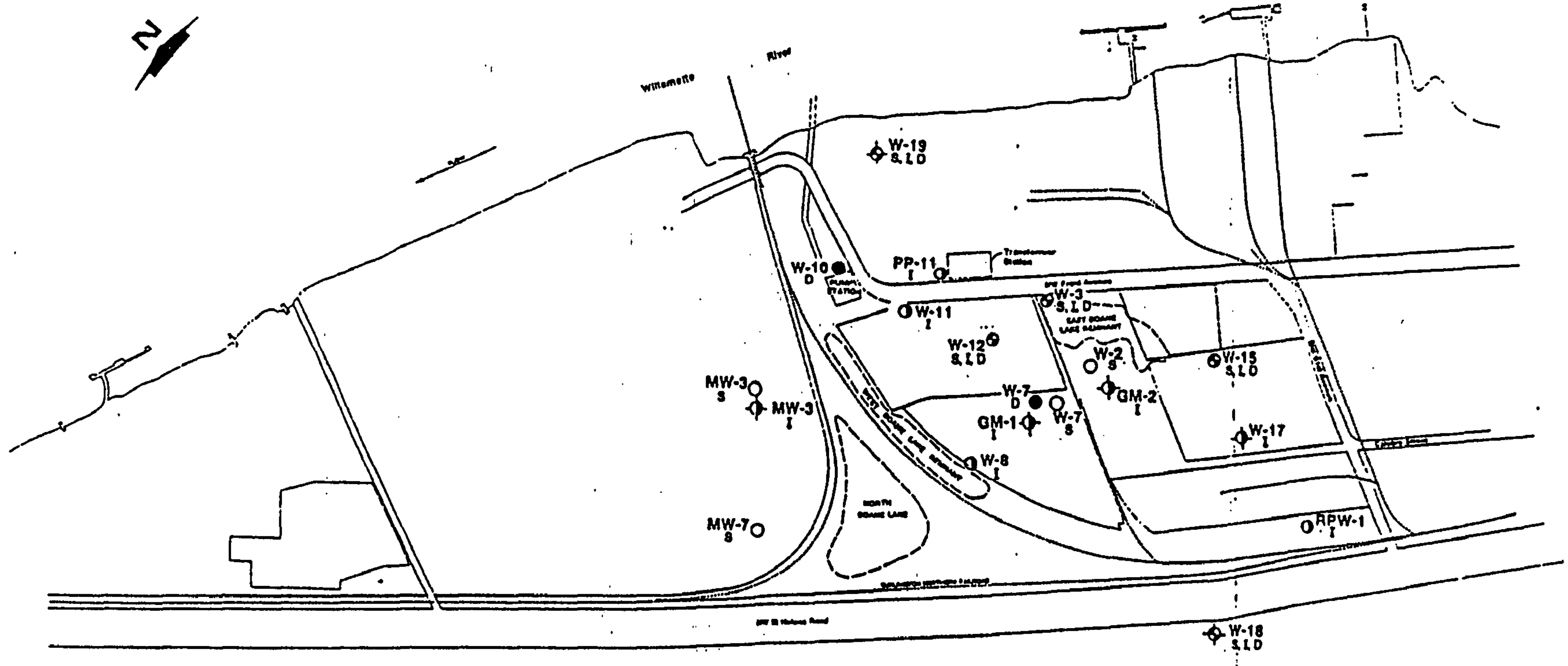


LEGEND

- ○ Shallow Well
- ◑ Intermediate Well
- ● Deep Well
- ⊗ Nested Well (Shallow/Intermediate/Deep)
- ⌖ Proposed Well Location

0 300 600 900
Approximate Scale in Feet

Note: S, I and D following designations indicate shallow, intermediate and deep screened horizons.

GERAGHTY & MILLER, INC.
Environmental Services

PROPOSED GROUND-WATER SAMPLING LOCATIONS
Doane Lake Area
Portland, Oregon

DRAWN	APPROVED	DATE	PROJECT NUMBER	FIGURE
SAC	dar	Nov. 1989	WA06301	2

Koppers021439

- Conduct two constant rate pumping tests in newly installed intermediate alluvial horizon wells. Ground-water samples will be collected from these wells before, during and after the pumping test to assess the water quality.

- Collect one round of ground-water samples from a select number of wells in the Study Area to be analyzed for full scale priority pollutants. The analyses will target the 126 compounds and 24 analytes included on EPA's target compound list (TCL) and target analyte list (TAL). The TCL and TAL include volatile and semivolatile compounds, pesticides, PCB's, metals, and cyanide. All analyses will be conducted following contract laboratory program (CLP) procedures by a government approved CLP laboratory. Refer to Tables 1 and 2 for a listing of the chemical constituents to be tested for, as well as CLP contracted detection limits. Sulfate will also be analyzed for following EPA approved method 9038. Field measurements of pH, temperature and conductivity will be made and recorded at the time of sampling. Shallow wells to be sampled are W-2 S, W-3 S, W-7 S, W-12 S, W-15 S, MW-3 S, MW-7 S, W-18 S, and W-19 S. Intermediate wells to be sampled are RPW-1 I, W-3 I, W-8 I, W-11 I, W-12 I, W-15 I, PP-11 I, W-17 I, W-18 I, W-19 I, MW-3 I, GM-1 I and GM-2 I. The deep wells to be sampled are W-3 D, W-7 D, W-10 D, W-12 D, W-15 D, W-18 D and W-19 D. The location of wells to be sampled may be varied slightly by Geraghty & Miller based upon its proposed hydraulic analysis. Refer to Figure 2 for location of wells to be sampled. Standard quality control procedures will be followed to ensure data quality. Field duplicate blanks and equipment blanks will be collected and analyzed for every twenty ground-water samples collected. Trip blanks will be provided for each cooler containing samples to be delivered to the laboratory.

- Collect one surface-water sample from each of the East, West and North Doane Lake remnants. The surface-water samples will be analyzed for the same chemical constituents as the ground-water samples following the same analytical procedures. Field measurements of pH, temperature and conductivity will be recorded at the time of sampling.

Reporting Activities

Monthly reports will be submitted to ODEQ, which summarize investigation activities during the previous month. It is anticipated that, after approval of a work plan, the field activities described in the previous section and all associated reporting can be completed in approximately eight to ten months.

After field activities are completed, data will be compiled and analyzed. All of the field and laboratory data obtained during the investigation, as well as a description of data collection procedures, will be included in a final ground-water investigation report. The report will include figures illustrating soil stratigraphy, well construction details, the distribution of significant chemical constituents, and potentiometric maps of ground-water elevations measured in the shallow, intermediate, deep and basalt wells. A discussion of conclusions derived from evaluation of all of the data will also be provided in the report.

Koppers021441

TABLE 1
USEPA INORGANIC TARGET ANALYTE LIST (TAL)

Analyte	Detection Limit*	Analyte	Detection Limit*
Aluminum	200	Antimony	60
Arsenic	10	Barium	200
Beryllium	5	Cadmium	5
Calcium	5000	Chromium	10
Cobalt	50	Copper	25
Iron	100	Lead	3
Magnesium	5000	Manganese	15
Mercury	0.2	Nickel	40
Potassium	5000	Selenium	5
Silver	10	Sodium	5000
Thallium	10	Vanadium	50
Zinc	20	Cyanide	10

* Detection limits are listed in parts per billion (ug/L).

All analyses shall be preformed in accordance with methods described in USEPA Contract Laboratory Program's "Statement of Work for Inorganic Analysis Multi-Media Multi-Concentration", dated August 1988.

TABLE 2
USEPA ORGANIC TARGET COMPOUND LIST (TCL)

VOLATILES

Compound	Detection Limit*	Compound	Detection Limit*
Chloromethane	10	Bromomethane	10
Vinyl Chloride	10	Chloroethane	10
Methylene Chloride	5	Acetone	10
Carbon Disulfide	5	1,1-Dichloroethene	5
1,1-Dichloroethane	5	1,2-Dichloroethene (Total)	5
Chloroform	5	1,2-Dichloroethane	5
2-Butanone	10	1,1,1-Trichloroethane	5
Carbon Tetrachloride	5	Vinyl Acetate	10
Bromodichloromethane	5	1,2-Dichloropropane	5
cis-1,3-Dichloropropene	5	Trichloroethene	5
Dibromochloromethane	5	1,1,2-Trichloroethane	5
Benzene	5	trans-1,3-Dichlorpropene	5
Bromoform	5	4-Methyl-2-pentanone	10
2-Hexanone	10	Tetrachloroethene	5
Toluene	5	1,1,2,2-Tetrachloroethane	5
Chlorobenzene	5	Ethyl Benzene	5
Styrene	5	Xylenes (Total)	5

SEMIVOLATILES

Compound	Detection Limit*	Compound	Detection Limit*
Phenol	10	bis(2-Chloroethyl) ether	10
2-Chlorophenol	10	1,3-Dichlorobenzene	10
1,4-Dichlorobenzene	10	Benzyl alcohol	10
1,2-Dichlorobenzene	10	2-Methylphenol	10
bis(2-Chloroisopropyl)ether	10	4-Methylphenol	10
N-Nitroso-di-n-dipropylamine	10	Hexachloroethane	10
Nitrobenzene	10	Isophorone	10
2-Nitrophenol	10	2,4-Dimethylphenol	10
Benzoic acid	50	bis(2-Chloroethoxy) methane	10

Koppers021443

TABLE 2 (cont'd)
USEPA ORGANIC TARGET COMPOUND LIST (TCL)

SEMIVOLATILES (cont'd)

Compound	Detection Limit*	Compound	Detection Limit*
2,4-Dichlorophenol	10	1,2,4-Trichlorobenzene	10
Naphthalene	10	4-Chloroaniline	10
Hexachlorobutadiene	10	4-Chloro-3-methylphenol (para-chloro-meta-cresol)	10
2-Methylnaphthalene	10	Hexachlorocyclopentadiene	10
2,4,6-Trichlorophenol	10	2,4,5-Trichlorophenol	50
2-Chloronaphthalene	10	2-Nitroaniline	50
Dimethylphthalate	10	Acenaphthylene	10
2,6-Dinitrotoluene	10	3-Nitroaniline	50
Acenaphthene	10	2,4-Dinitrophenol	50
4-Nitrophenol	50	Dibenzofuran	10
2,4-Dinitrotoluene	10	Diethylphthalate	10
4-Chlorophenyl-phenyl ether	10	Fluorene	10
4-Nitroaniline	50	4,6-Dinitro-2-methylphenol	50
N-Nitrosodiphenylamine	10	4-Bromophenyl-phenylether	10
Hexachlorobenzene	10	Pentachlorophenol	50
Phenanthrene	10	Anthracene	10
Di-n-butylphthalate	10	Fluoranthene	10
Pyrene	10	Butylbenzylphthalate	10
3,3'-Dichlorobenzidine	20	Benzo(a)anthracene	10
Chrysene	10	bis(2-Ethylhexyl)phthalate	10
Di-n-octylphthalate	10	Benzo(b)fluoranthene	10
Benzo(k)fluoranthene	10	Benzo(a)pyrene	10
Indeno(1,2,3-cd)pyrene	10	Dibenz(a,h)anthracene	10
Benzo(g,h,i)perylene	10		

TABLE 2 (cont'd)
USEPA ORGANIC TARGET COMPOUND LIST (TCL)

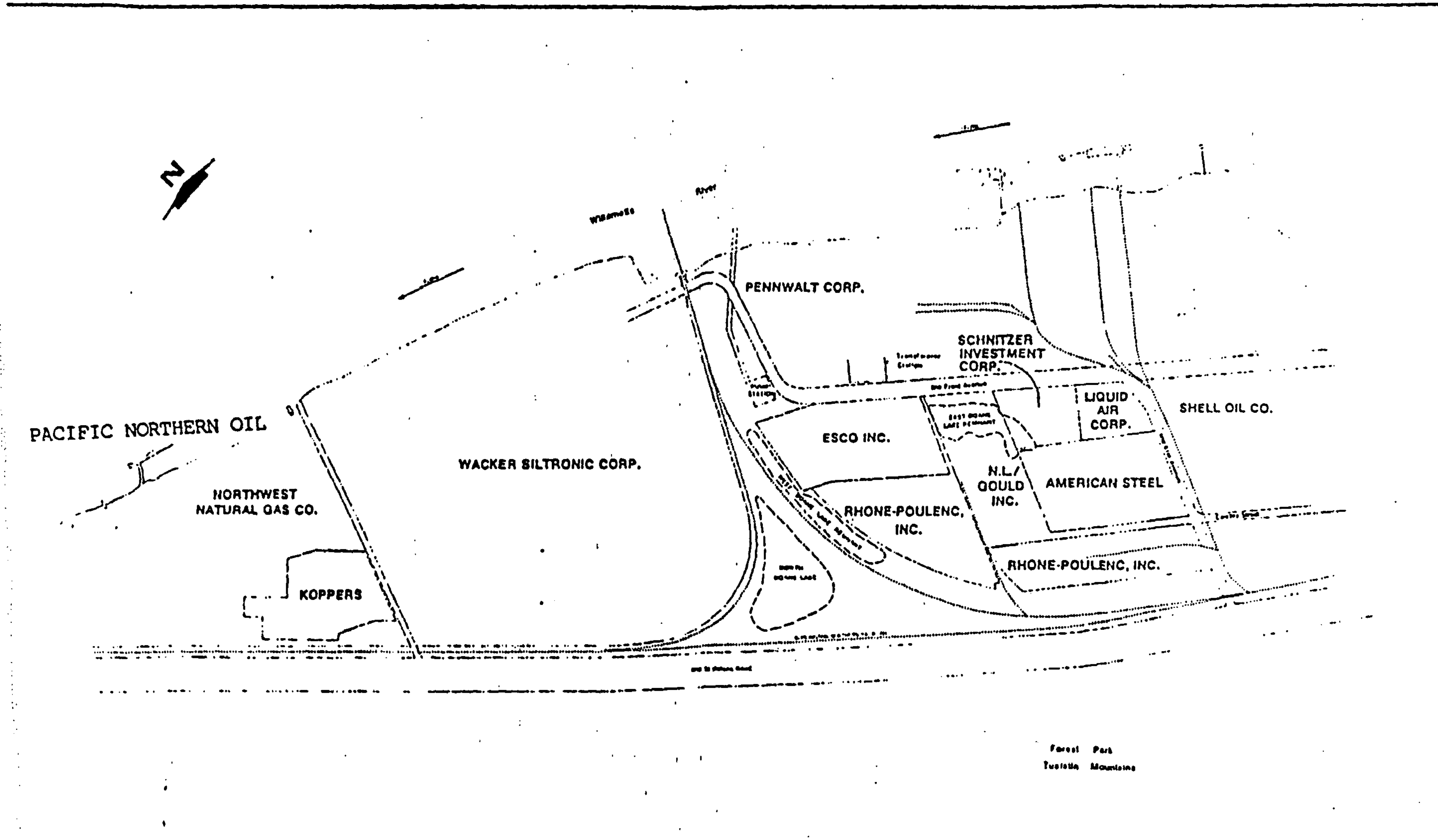
PESTICIDES/PCBS

Compound	Detection Limit*	Compound	Detection Limit*
alpha-BHC	0.05	beta-BHC	0.05
delta-BHC	0.05	gamma-BHC (Lindane)	0.05
Heptachlor	0.05	Aldrin	0.05
Heptachlor epoxide	0.05	Endrosulfan I	0.05
Dieldrin	0.10	4,4'-DDE	0.10
Endrin	0.10	Endosulfan II	0.10
4,4'-DDD	0.10	Endosulfan sulfate	0.10
4,4'-DDT	0.10	Methoxychlor	0.5
Endrin ketone	0.10	alpha-Chlordane	0.5
gamma-Chlordane	0.5	Toxaphene	1.0
Aroclor-1016	0.5	Aroclor-1221	0.5
Aroclor-1232	0.5	Aroclor-1242	0.5
Aroclor-1248	0.5	Aroclor-1254	1.0
Aroclor-1260	1.0		

* Detection limits are listed in parts per billion (ug/L).

All analyses shall be preformed in accordance with methods described in USEPA Contract Laboratory Program's "Statement of Work for Organic Analysis Multi-Media Multi-Concentration", dated February 1988.

ATTACHMENT B
ORDER ON CONSENT
DEQ NO. ECSR-NWR-89-13



GERAGHTY & MILLER, INC.
Environmental Services

SITE PLAN Doane Lake Area Portland, Oregon				FIGURE 2
DRAWN	APPROVED	DATE	PROJECT NUMBER	
SAC		Oct 1989	WA06301	

Koppers021446

STATE OF OREGON

DEPARTMENT OF ENVIRONMENTAL QUALITY

In the Matter of:	) DEQ NO. ECSR-NWR-89-13
ESCO Corporation; Gould, Inc.; NL Industries, Inc.; Northwest Natural Gas Company; Pacific Northern Oil Company; Pennwalt Corporation; Rhone-Poulenc AG Company; and Schnitzer Investment Corp.,	) ORDER ON CONSENT
Respondents.	)

Pursuant to ORS 466.570(4), the Director, Oregon Department of Environmental Quality (DEQ), issues this Order on Consent ("Consent Order") to ESCO Corporation; Gould, Inc.; NL Industries, Inc.; Northwest Natural Gas Company; Pacific Northern Oil Company; Pennwalt Corporation; Rhone-Poulenc AG Company; and Schnitzer Investment Corp. (collectively, Respondents). This Consent Order contains the following provisions:

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1. Purpose.

The mutual objective of DEQ and Respondents is to implement the Scope of Work ("SOW"), attached to and incorporated by reference into this Consent Order, as Attachment A. This investigation outlined in the SOW is necessary to evaluate the hydrogeological conditions in the Doane Lake Study Area ("Study Area") and the interrelationships between remediation, if any, of groundwater at the Gould, Inc. Superfund site and hydrogeological conditions underlying Respondents' sites in the Study Area.

2. Stipulations.

Respondents and DEQ consent and agree:

(A) To issuance of this Consent Order;

(B) To perform and comply with all provisions of this Consent Order;

(C) To not challenge DEQ's jurisdiction to issue and enforce this Consent Order;

(D) To waive any right Respondents might have to seek judicial or administrative review of this Consent Order prior to commencement of action by DEQ to enforce any of the provisions hereof.

(E) That this Consent Order shall not be admissible in any administrative or judicial action except an action to enforce any of its terms.

(F) That Respondents' rights and duties under this Consent Order shall not be subject to any rules adopted under ORS 466.553 subsequent to issuance of this Consent Order.

(G) To not litigate, in any proceeding brought by DEQ to enforce this Consent Order or to assess penalties for noncompliance with this Consent Order, any issue other than Respondents' compliance with this Consent Order;

(H) To not assert, in any proceeding brought by DEQ to enforce this Consent Order or to assess penalties for noncompliance with this Consent Order, that performance of an interim remedial action or removal measure under this Consent Order by Respondents discharges Respondents' duty to fully perform all remaining provisions of this Consent Order.

3. Findings of Fact.

DEQ makes the following findings without admission of any such facts by Respondents:

A. Respondents are Oregon Corporations or are foreign corporations that are now doing business in the State of Oregon, or are foreign corporations that formerly did business in the State of Oregon so as to render them subject to the jurisdiction of the courts of this state.

B. ESCO Corporation owns and operated a site at 6900 N. W. Front Avenue, Portland, Oregon.

Gould, Inc. owns and operated a site at 5909 N. W. 61st Street, Portland, Oregon.

NL Industries, Inc. owned and operated a site at 5909 N. W. 61st Street, Portland, Oregon.

Northwest Natural Gas Company owns and operated a site at 7900 N. W. St. Helens Road, Portland, Oregon.

Pacific Northern Oil Company operates a site at 7900 N. W. St. Helens Road, Portland, Oregon.

Pennwalt Corporation owns and operates a site at 6400 N. W. Front Avenue, Portland, Oregon.

Rhone-Poulenc AG Company owns and operates a site at 6200 N. W. St. Helens Road, Portland, Oregon.

Schnitzer Investment Corporation owns and operated a site at 6501 N. W. Front Avenue, Portland, Oregon.

Attachment B, attached to and incorporated by reference into this Consent Order, is a site diagram indicating the relative location of the sites of each of the Respondents.

C. The DEQ finds that there has been a release or a threat of release into the environment of hazardous substances at the Study Area.

D. In addition to the parties who are signatories to this Agreement, DEQ has notified the following entities that they may be liable parties pursuant to ORS 466.567 for conduct of activities addressed in this Order on Consent:

Wacker-Siltronic Corporation
Liquid Air Corporation
Koppers Industries, Inc.

These entities have declined or have not responded to requests by DEQ that they participate in this Order on Consent. DEQ reserves all legal rights and remedies with respect to these nonsettling entities and this Order on Consent shall not relieve any of them from any liability they may have under applicable state, federal, or common law.

4. Conclusions of Law and Determinations.

Based on the above Findings of Fact DEQ determines, without admission of any such determinations by Respondents and without waiver of Respondents' rights to challenge such finding of fact or determinations in any proceedings other than one brought by DEQ to enforce the provisions of this Consent Order that:

A. Each Respondent is a "person" under ORS 466.540(13).

B. Each Respondent's property is a "site" under OAR 340-122-020.

C. The presence of hazardous substances in the ground water in the Doane Lake Area constitutes a "release" or threat of "release" into the environment under ORS 466.540(14).

D. The activities required by this Consent Order are necessary to protect public health, safety, welfare and the environment.

Based on the above Stipulations, Findings of Fact, and Conclusions of Law and Determinations, DEQ ORDERS:

5. Work to be Performed.

A. Scope of Work.

Within 60 days of issuance of this Consent Order, Respondents shall submit for DEQ review and comment, a Work Plan to implement the Scope of Work (SOW), Attachment A. Respondents shall commence implementation of the Work Plan within 30 days of approval of the Work Plan by DEQ.

B. Reports.

Respondents shall submit reports that document all activities completed under the Work Plan and shall be submitted in accordance with the schedule in the Work Plan.

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C. Monthly Status Reports.

Respondents shall submit monthly status reports to DEQ outlining activities conducted during the past month and activities planned for the upcoming month, and including a summary of data results received during the previous month.

6. Public Participation.

Upon issuance of this Consent Order, DEQ will provide public notice of this Consent Order through, at least but not limited to, a press release to local paper(s) of general circulation describing the activities to be performed by Respondents under this Consent Order; provided, however, Respondents shall have received a draft of the press release or other communication prepared for distribution to the public at least five (5) working days before issuance of the release, and DEQ will consider in good faith any comments by Respondents on any release prior to issuance. Copies of the Consent Order will be made available to the public.

7. General Provisions.

A. Respondents' Access.

Each Respondent shall be responsible for obtaining in a timely fashion access to such Respondent's site and other property in its possession and control as is necessary to carry out the requirements of this Consent Order. This Consent Order does not convey any rights of access to Respondents. With respect to any other premises where work is reasonably necessary to carry out the requirements of this Consent Order, which premises is not under the ownership or control of Respondents or any one of them, DEQ shall use its best efforts to obtain access to such premises so as to enable Respondents to fully perform the requirements of this Consent Order.

B. DEQ Access and Oversight.

(1) Upon reasonable prior notice and during normal business hours each Respondent shall allow DEQ to enter and move freely about portions of such Respondent's property only as necessary for, and only as related directly to, this Consent Order, which may include to the extent related directly to the work under this Consent Order: (a) observing Respondents' progress in implementing this Consent Order; (b) conducting such tests and taking such samples as DEQ deems necessary; (c) verifying data submitted to DEQ by Respondents; (d) using camera, sound recording, or other recording equipment. To accommodate Respondents' proprietary concerns the DEQ will allow Respondents' personnel to operate the camera, sound or other recording devices so long as the DEQ is satisfied that the manner and content of the photographs and recordings are accurate and provide all information appropriately sought by the DEQ. Respondents shall permit DEQ to inspect and copy all records, files, photographs, documents, and data relating to work under this Consent Order, except that Respondents shall not be required to permit DEQ inspection or copying of items subject to attorney-client and attorney work product privileges.

(2) DEQ employees, agents, or contractors, when on any Respondent's premises, shall abide by all reasonable and customary safety procedures and protocols established by the Respondent and shall use their best efforts to avoid disruption of a Respondent's normal business or production activities.

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C. Project Coordinators. All reports, notices, and other communications required under or relating to this Consent Order shall be directed to:

DEQ Project Coordinator:	Respondents' Steering Committee Chairperson:
Sandra Anderson	Claudia K. Powers
Environmental Cleanup Division	Lindsay, Hart, Neil and Weigler
Department of Environmental Quality	Suite 1800
811 Southwest Sixth Avenue	222 S. W. Columbia
Portland, Oregon 97204	Portland, Oregon 97201-6618
(503) 229-6744	(503) 226-1191
FAX: (503) 229-6124	FAX: (503) 226-0079

D. Notice and Samples.

Respondents shall make every reasonable attempt to notify DEQ of any excavation, drilling, or sampling to be conducted under this Consent Order at least five (5) working days prior to such activity but in no event less than twenty-four (24) hours prior to such activity unless otherwise agreed or in an emergency situation. Upon DEQ's oral request, confirmed in writing as soon as practicable, Respondents shall provide DEQ with a split or duplicate of any sample taken pursuant to this Consent Order. In the event DEQ conducts any sampling or analysis in connection with this Consent Order, DEQ shall notify Respondents of any excavation, drilling, or sampling at least five (5) working days prior to such activity but in no event less than twenty-four (24) hours prior to such activity. Upon Respondents' oral request, DEQ shall provide Respondents with a split or duplicate of any samples taken in connection with this Consent Order and promptly shall provide Respondents with copies of all analytical data for such samples.

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E. Quality Assurance.

Respondents shall conduct all sampling, sample transports, and sample analysis in accordance with the Quality Assurance/Quality Control ("QA/QC") provisions submitted to DEQ pursuant to the Work Plan. Respondents shall ensure that each laboratory used by Respondents for analysis performs such analyses in accordance with such provisions. In the event DEQ conducts any sampling or analysis in connection with this Consent Order, DEQ shall conduct such sampling, sample transport, and sample analysis in accordance with Quality Assurance/Quality Control guidance established and published by DEQ or the United States Environmental Protection Agency and shall provide Respondents with documentation demonstrating compliance with such guidance.

F. Records.

(1) Submission upon request.

In addition to those reports and documents specifically required under this Consent Order, Respondents shall provide to DEQ within ten (10) days of DEQ's written request copies of QA/QC memoranda and audits, data which have undergone QA/QC review, final plans, reports, directions to contractors, field logs, laboratory analytical reports, and any other documents that relate directly to the work under this Consent Order except to the extent that any such other documents are subject to any attorney-client or attorney work product privileges.

(2) Preservation.

Each Respondent shall preserve all records and documents in the possession or control of Respondent or its respective employees, agents, or contractors that relate directly to activities under this Consent Order for at least five (5) years after the last certification of completion under Section 8 of this Consent Order. Except as exempted under subsection (1) of this Section F and upon DEQ's request, a Respondent shall provide copies of such records to DEQ.

(3) Confidentiality.

Any Respondent may assert a claim of confidentiality regarding any documents, records or information submitted to or compiled by DEQ pursuant to this Consent Order. DEQ shall treat documents, records and information for which a claim of confidentiality has been made in accordance with ORS 192.410 through 192.505. If a Respondent does not make a claim of confidentiality at the time the documents, records or information are submitted to or copied by DEQ, the documents, records or information may be made available to the public without notice to the Respondent.

G. Other Applicable Laws.

All actions under this Consent Order shall be performed in accordance with all applicable federal, state, and local laws and regulations; provided, in accordance with ORS 466.573, any on-site activities hereunder may be exempted from any applicable requirements of ORS 466.005 through 466.350 and ORS Chapters 459 and 468.

H. Reimbursement of DEQ Oversight Costs.

Until completion of work to be performed under this Consent Order, DEQ shall accrue costs incurred after issuance of this Order by DEQ or the State of Oregon in connection with any activities related to oversight of this Order.

Oversight costs to be accrued shall include both direct and indirect costs. Direct costs include direct labor costs, site specific expenses, DEQ contractor or legal costs, and any other costs related to DEQ oversight of this

Order. The indirect cost rate shall be the rate charged by DEQ on federal agreements. That rate will vary as the rate charged on federal agreements varies.

DEQ reserves the right to seek reimbursement of any costs incurred by the state in connection with oversight activities related to this Consent Order from any person(s) who may be liable for such costs under ORS 466.567 or other applicable law. Nothing contained herein shall be a finding or an admission that Respondents are so liable.

I. <u>Force Majeure</u>.

(1) If any event occurs that is beyond Respondents' reasonable control and that causes or might cause, in whole or in part, a delay or deviation in performance of the requirements of this Consent Order, Respondents shall promptly notify DEQ's Project Coordinator orally of the cause of the delay or deviation and its anticipated duration, the measures that have been or will be taken to prevent or minimize the delay or deviation, and the timetable by which Respondents propose to carry out such measures. Respondents shall confirm in writing this information within five (5) working days of the oral notification.

(2) If Respondents demonstrate to DEQ that the delay or deviation has been or will be caused, in whole or in part, by circumstances beyond the control and despite the due diligence of Respondents, DEQ shall extend times for performance of related activities under this Consent Order as appropriate. Circumstances or events beyond Respondents' control include but are not limited to acts of God, strikes or work stoppages, fire, explosion, riot, sabotage, war, or DEQ's inability to gain access to any property pursuant to section 7(A) of this Consent Order. Increased cost of performance, or changed business or

economic circumstances, shall be presumed not to be circumstances beyond Respondents' control.

J. DEQ Approvals.

(1) Where DEQ review and approval is required for any plan or activity under the Work Plan under this Consent Order, Respondents shall not proceed with the plan or activity until DEQ written approval is received. DEQ approval shall not be unreasonably withheld. DEQ shall make every good faith attempt to respond to the plan or activity submittal within thirty (30) days of receipt of the submittal with either an approval or disapproval. If limited resources or other agency priorities prevent DEQ from responding within thirty (30) days, DEQ shall notify Respondents. Such approval shall not be required for activities undertaken individually by a Respondent on its property and not as implementation of the Work Plan under this Consent Order. Any delay in granting or denying approval shall correspondingly extend the time for completion by Respondents of that activity and each successive related activity.

(2) In the event of disagreement between Respondents and DEQ regarding review and approval of a plan or activity, or regarding interpretation of data, Respondents and DEQ shall provide each other their respective positions in writing regarding the disputed matter and shall make a good faith effort to resolve any disagreement including face-to-face meetings. In the event DEQ and Respondents cannot resolve the disagreement by this method, DEQ and Respondents may upon mutual agreement select a mutually acceptable, qualified, and neutral fact-finder. A party that declines to agree to a neutral fact-finder shall provide the other party a written statement of the reasons for declining to submit the disputed issue to a fact-finder. The

DEQ's act of declining submittal of a disputed matter to a neutral fact-finder shall not be considered a final agency action for purposes of judicial review. The fees and expenses of the fact-finder shall be borne equally by DEQ and Respondents and DEQ's costs so incurred shall not be subject to reimbursement as an oversight cost.

(3) Within twenty (20) working days after selection of the fact-finder, DEQ and Respondents shall jointly provide the fact-finder an agreed-upon statement of the precise nature of the dispute and a copy of the procedures to be followed by the fact-finder as set forth in this subsection. Within the same twenty (20) day period, DEQ and Respondents shall provide the fact-finder (with copies to each other) their respective positions regarding the dispute and the rationale, information, and documents supporting such position.

(4). Within thirty (30) days of the parties' submittals, or within other such time period as agreed to by the parties and the fact-finder, the fact-finder shall provide DEQ and Respondents a written advisory report setting forth the fact-finder's determination regarding the dispute. DEQ shall consider the advisory report in making a final decision regarding the disputed matter. The advisory report shall not be binding on DEQ; provided, the advisory report shall be admissible in any action commenced by DEQ to enforce this Consent Order or to assess penalties regarding the disputed matter.

(5) Invocation of this dispute resolution procedure shall extend the time for completion by Respondents of the activity subject to dispute and each successive related activity. Any final decision by DEQ regarding a disputed matter shall be provided to Respondents in writing and shall be an

enforceable part of this Consent Order.

K. Stipulated Penalties.

Upon any unexcused violation by Respondents of any provision of this Consent Order, and upon Respondents' receipt from DEQ of written notice of violation, Respondents shall, if the violation continues after ten (10) days from receipt of such notice, pay the stipulated penalties set forth in the following schedule:

(1) Five hundred dollars ($500.00) for the first week of violation or delay and one thousand dollars ($1,000.00) per day of violation or delay thereafter, for:

(a) failure to submit a revised final work plan in accordance with the schedule in Attachment A of this Consent Order; (b) failure to complete the work in accordance with the schedule in the approved work plan; or

(c) failure to submit a revised final report in accordance with the schedule in Attachment A of this Consent Order;

(2) Five hundred dollars ($500.00) for the first week of violation or delay and one thousand dollars ($1,000.00) per day of violation or delay thereafter, for:

(a) failure to submit a draft Work Plan in accordance with the Schedule in Attachment A of this Consent Order;

(b) failure to commence the work in accordance with the schedule in the approved Work Plan; or

(c) failure to submit draft report in accordance with the schedule in the approved Work Plan.

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(3) A Respondent shall pay the sum of two thousand five hundred dollars ($2,500.00) for failure to provide access to its property pursuant to Section 7.B.

(4) Notwithstanding Subsections (1) and (2) of this Section 7(K), stipulated penalties for violations of these subsections, if any, shall not be payable until completion of the work under this Order; provided however, if Respondents complete all work in accordance with final dates of completion in accordance with schedules set out in the Work Plan as amended from time to time, all penalties will be excused.

Respondents shall pay, within thirty (30) days of receipt of a written notice of violation from DEQ, the amount of such stipulated penalty by check made payable to the State of Oregon.

L. Enforcement of Consent Order and Reservation of Rights.

(1) In addition to stipulated penalties provided under Section 7.K., DEQ reserves the right to seek injunctive relief or such other equitable relief other than administrative penalties as may be necessary to enforce the provisions of this Consent Order and/or to protect public health, safety, welfare, and the environment. From the effective date of this Consent Order, for as long as the terms herein and any modifications thereto are complied with, DEQ agrees not to sue or take any administrative action against the Respondents, or any of them, their agents, assigns, and successors for the work required under this Consent Order. Nothing herein shall be deemed to grant any rights to persons or entities not a party to the Consent Order, and DEQ and Respondents reserve all rights against such persons or entities;

(2) Respondents do not admit any liability, violation of law, or factual or legal finding, conclusion, or determination made by DEQ under this

Consent Order.

(3) Nothing in this Consent Order shall prevent Respondents from exercising any rights of contribution or indemnification Respondents might have against any person regarding activities under this Consent Order.

M. Disclaimer of Liability.

Notwithstanding any approvals which may be granted by DEQ, the State shall not be liable by virtue of this Consent Order for any injuries or damages to persons or property resulting from any acts or omissions of the Respondents, their officers, employees, agents, receivers, trustees, successors, assigns, contractors, subcontractors, or any other person acting on their behalf, in carrying out any activities pursuant to this Consent Order. Neither Respondents, nor any of them, shall be liable by virtue of this Consent Order for any injuries or damages to persons or property resulting from any acts or omissions of DEQ, its employees, agents, contractors or subcontractors or any other person acting in DEQ's behalf, in carrying out any activities pursuant to this Consent Order. This disclaimer shall not abrogate any claims which the parties might otherwise have under common law or statute.

N. Other Claims.

Nothing in this Consent Order shall constitute or be construed as a release from any claim, cause of action, or demand in law or equity against any person, firm, partnership, corporation, or other entity not a signatory to this Consent Order for any liability it may have arising out of or in any way relating to the generation, treatment, storage, handling, transportation, release or disposal of any hazardous substance, hazardous waste, solid waste, pollutant, or contamination present on, at, beneath, near, or migrating from, taken to, or taken from any site identified in Section 3. above.

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O. Non-Admission.

Respondents do not admit any of the Findings of Fact, Conclusions of Law and Determinations herein, and reserve any and all rights and defenses which they may have, individually and jointly, regarding liability or responsibility in any subsequent proceedings concerning the Doane Lake Area or any other site.

P. Parties Bound.

This Consent Order shall be binding on the parties, and their respective successors, agents, and assigns. No change in ownership or corporate or partnership status shall in any way alter a Respondent's obligations under this Consent Order unless otherwise approved by DEQ and the other Respondents in writing, which approval shall not be unreasonably withheld. Each Respondent shall also be under an affirmative duty for the duration of this Consent Order to notify and provide a copy of this Consent Order to any prospective successor, purchaser, lessee or assignee of its site.

Q. Modification.

DEQ and Respondents may modify this Consent Order by mutual written agreement.

8. Notice and Certification of Completion.

Upon completion of the work to be performed pursuant to Section 5 of this Consent Order, Respondents shall submit to DEQ a written notice of completion and request for certification of completion in accordance with ORS 466.577(10), which certification shall not be unreasonably withheld. This Consent Order shall be deemed satisfied and terminated upon such certification.

9. Signatures.

STIPULATED, AGREED, and APPROVED for issuance:

Respondents

ESCO CORPORATION

By: ______________________________ Date: ______________
(Name)

____
(Title)

GOULD, INC.

By: ______________________________ Date: ______________
(Name)

____
(Title)

NL INDUSTRIES, INC.

By: ______________________________ Date: ______________
(Name)

____
(Title)

NORTHWEST NATURAL GAS COMPANY

By: ______________________________ Date: ______________
(Name)

____
(Title)

9. <u>Signatures</u>.

STIPULATED, AGREED, and APPROVED for issuance:

Respondents

ESCO CORPORATION

By: ____________________ Date: 12/15/89
(Name)

President-Proprietary Products group
(Title)

GOULD, INC.

By: ____________________ Date: ____________
(Name)

____
(Title)

NL INDUSTRIES, INC.

By: ____________________ Date: ____________
(Name)

____
(Title)

NORTHWEST NATURAL GAS COMPANY

By: ____________________ Date: ____________
(Name)

____
(Title)

9. Signatures.

STIPULATED, AGREED, and APPROVED for issuance:

Respondents

ESCO CORPORATION

By: ______________________ Date: ____________
(Name)

____
(Title)

GOULD, INC.

By: Delmar C. Vey Date: 12/18/89
(Name)

VP. GENERAL COUNSEL
(Title) + SECRETARY

NL INDUSTRIES, INC.

By: ______________________ Date: ____________
(Name)

____
(Title)

NORTHWEST NATURAL GAS COMPANY

By: ______________________ Date: ____________
(Name)

____
(Title)

9. Signatures.

STIPULATED, AGREED, and APPROVED for issuance:

Respondents

ESCO CORPORATION

By: ______________________________ Date: ______________
(Name)

____
(Title)

GOULD, INC.

By: ______________________________ Date: ______________
(Name)

____
(Title)

NL INDUSTRIES, INC.

By: Janet D Smith Date: 12/14/89
(Name)

Associate General Counsel
(Title)

NORTHWEST NATURAL GAS COMPANY

By: ______________________________ Date: ______________
(Name)

____
(Title)

Koppers021467

9. **Signatures.**

STIPULATED, AGREED, and APPROVED for issuance:

Respondents

ESCO CORPORATION

By: ______________________ Date: ______________
(Name)

____
(Title)

GOULD, INC.

By: ______________________ Date: ______________
(Name)

____
(Title)

NL INDUSTRIES, INC.

By: ______________________ Date: ______________
(Name)

____
(Title)

NORTHWEST NATURAL GAS COMPANY

By: Bruce R. DeBolt Date: 19 Dec 89
(Name)

Sr Vice President
(Title)

PACIFIC NORTHERN OIL COMPANY

By: David A. Waldschmidt Date: 12-14-89
(Name)

Gen. Counsel
(Title)

PENNWALT CORPORATION

By: ______________________ Date: ______________
(Name)

____
(Title)

RHONE-POULENC AG COMPANY

By: ______________________ Date: ______________
(Name)

____
(Title)

SCHNITZER INVESTMENT CORP.

By: ______________________ Date: ______________
(Name)

____
(Title)

STIPULATED, AGREED, and so ORDERED:

State of Oregon
Department of Environmental Quality

By: Fred Hansen Date: JAN 10 1990
Fred Hansen
Director

PACIFIC NORTHERN OIL COMPANY

By: ______________________________ Date: ______________
(Name)

____
(Title)

PENNWALT CORPORATION

By: Edward L Zorke Date: 12-13-89
(Name)

Plant Manager
(Title)

RHONE-POULENC AG COMPANY

By: ______________________________ Date: ______________
(Name)

____
(Title)

SCHNITZER INVESTMENT CORP.

By: ______________________________ Date: ______________
(Name)

____
(Title)

STIPULATED, AGREED, and so ORDERED:

State of Oregon
Department of Environmental Quality

By: Fred Hansen Date: JAN 10 1990
Fred Hansen
Director

PACIFIC NORTHERN OIL COMPANY

By: ______________________________ Date: ______________
(Name)

____
(Title)

PENNWALT CORPORATION

By: ______________________________ Date: ______________
(Name)

____
(Title)

J.C.

RHONE-POULENC AG COMPANY

By: N. C. Robinds Date: 12/18/89
(Name)

Vice-President & General Manager, Operations
(Title)

SCHNITZER INVESTMENT CORP.

By: ______________________________ Date: ______________
(Name)

____
(Title)

STIPULATED, AGREED, and so ORDERED:

State of Oregon
Department of Environmental Quality

By: Fred Hansen Date: JAN 10 1990
Fred Hansen
Director

PACIFIC NORTHERN OIL COMPANY

By: ______________________________ Date: ______________
(Name)

____
(Title)

PENNWALT CORPORATION

By: ______________________________ Date: ______________
(Name)

____
(Title)

RHONE-POULENC AG COMPANY

By: ______________________________ Date: ______________
(Name)

____
(Title)

SCHNITZER INVESTMENT CORP.

By: ______________________________ Date: 12-13-89
(Name)

Vice Pres.
(Title)

STIPULATED, AGREED, and so ORDERED:

State of Oregon
Department of Environmental Quality

By: ______________________________ Date: JAN 10 1990
Fred Hansen
Director

SCOPE OF WORK

The following scope of work is designed to address hydrogeologic data gaps identified in Geraghty & Miller, Inc.'s report entitled "Phase I Hydrogeological Investigation: Assessment of Existing Conditions", dated November 1, 1989 (the Report); the Oregon Department of Environmental Quality's (ODEQ's) comments in response to the Report as set out in Ms. Sandra Anderson's November 9, 1989 letter to the Doane Lake Industrial Group and Geraghty & Miller; the U.S. Environmental Protection Agency's (EPA's) comments in response to the Report as set out in Mr. David Tetta's November 8, 1989 letter to Ms. Sandra Anderson; Geraghty & Miller and the Doane Lake Industrial Group's comments in response to ODEQ and EPA as set out in Geraghty & Miller's November 17, 1989 and December 1, 1989 letters to Ms. Sandra Anderson; and ODEQ's oral comments presented during the course of meetings held to discuss the Report. The objectives of the proposed hydrogeological investigation in the Doane Lake Area are to determine hydrologic conditions in the vicinity of the Gould Superfund site, determine the zone of influence of potential remedial activities, and determine the impact that ground-water quality in the Doane Lake Area could have on potential Gould site remedies.

Work Plan Preparation

A detailed work plan describing the activities outlined below under Field Activities and Reporting Activities will be submitted to the Oregon Department of Environmental Quality (ODEQ) for approval, within sixty (60) days of issuance of the Order on Consent. The work plan will be prepared in accordance with guidelines established in "Guidance for Conducting Remedial Investigations and Feasibility Studies Under CERCLA", EPA/540/G-87/004 (OSWER Directive 9355.3-01), 1988, and OAR 340-122-080. The work plan will include: a brief summary of conclusions from Geraghty & Miller's report of existing conditions; a detailed account of proposed investigative activities to include drilling methods, monitoring well construction details, well development, sampling procedures, and pumping test procedures; a schedule for all proposed activities and submittals; and a description of qualifications of personnel to be involved in the project. Appendices to the work plan will include a Sampling and Analysis Plan and Health and Safety Plan.

All sampling and analytical procedures will be established prior to initiating the investigation in a sampling and analysis plan (SAP). The purpose of the SAP is to establish routine procedures for collecting and analyzing data to ensure that data obtained during the investigation are reliable. The SAP will be composed of a field sampling plan (FSP) and a quality assurance program plan (QAPP), and will include a discussion of collection methods, quality control procedures, sample containers, chain-of-custody procedures, analytical methods, and detection level goals. The SAP will be prepared in accordance with the following guidance documents: " Data Quality Objectives for Remedial Response Activities", EPA/540/G-87/004f (OSWER Directive 9355.0-7B), March, 1987; "Test Methods for Evaluating Solid Waste", SW-846; "A Compendium of Superfund Field Operations Methods", EPA/540/P-87/001 (OSWER Directive 9355.0-14), December, 1987; and

"Guidelines and Specifications for Preparing Quality Assurance Program Plans", QAMS-004/80, 1980.

A site specific health and safety plan will be prepared for review by all field personnel prior to conducting any on-site field work. The plan will describe known hazards in the area and recommend the level of protective clothing and equipment to be used by field technicians. Equipment and personal decontamination procedures will be described in the health and safety plan as well. Local medical, fire and enforcement agency numbers and addresses will be included for quick referral during an emergency situation.

Field Activities

The following field activities will be performed in order to obtain data which are necessary to meet the objectives of the proposed investigation.

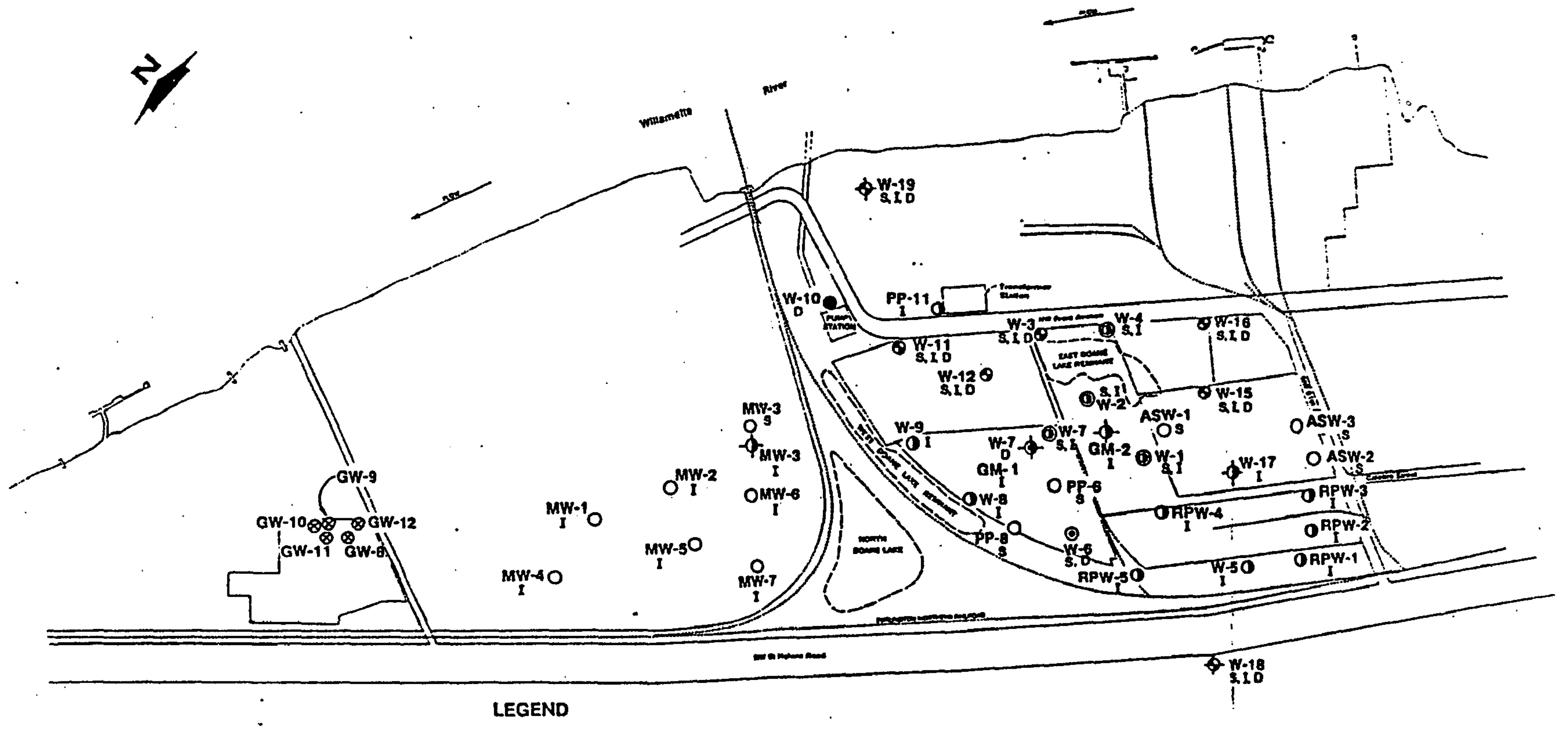
- Install eleven new monitoring wells in the Doane Lake Area. Three of the new wells will be installed down gradient from the Gould site near the Willamette River and will be completed as shallow, intermediate and deep wells (W-19 S, I and D). Another triple completion well nest (W-18 S, I and D) will be installed up gradient of the Rhône-Poulenc property near NW St Helens Road. Four intermediate wells will be installed in the Doane Lake Area. Two of the wells will serve as pumping wells and be located near monitoring well sites W-7 (GM-1 I) and W-2 (GM-2 I). Of the remaining two intermediate wells one (W-17 I) will be installed on the southwest side of the American Steel property and the other (MW-3 I) will be installed near MW-3 S on the Wacker property. One deep well (W-7 D) will be installed near W-7. All of the wells will be installed in compliance with ODEQ's "Guidelines for Monitoring Well Design, Installation, Testing, Decommissioning and Record Keeping". Refer to Figure 1 for proposed well locations.

- Resurvey all new and existing monitoring well tops in the Doane Lake Area to tie the well network into a common datum.

- Collect water-level measurements from all of the monitoring wells and surface water bodies in the Study Area on a monthly basis for six months.

- Collect continuous ground-water level data in two of the wells in the south Doane Lake Area by installing continuous water-level recorders. The recorders will remain in place for one month.

- Conduct slug tests in the newly installed wells, to integrate hydraulic data from the new wells with the existing data base.



LEGEND

- ○ Shallow Well
- ◐ Intermediate Well
- ● Deep Well
- Nested Well (Shallow/Intermediate)
- Nested Well (Shallow/Deep)
- Nested Well (Shallow/Intermediate/Deep)
- Nested Well (Intermediate/Deep)
- ⊗ Groundwater Recovery Well
- Proposed Well Location

0 300 600 900

Approximate Scale in Feet

Note: S, I and D following well designations indicate shallow, intermediate and deep screened horizons.

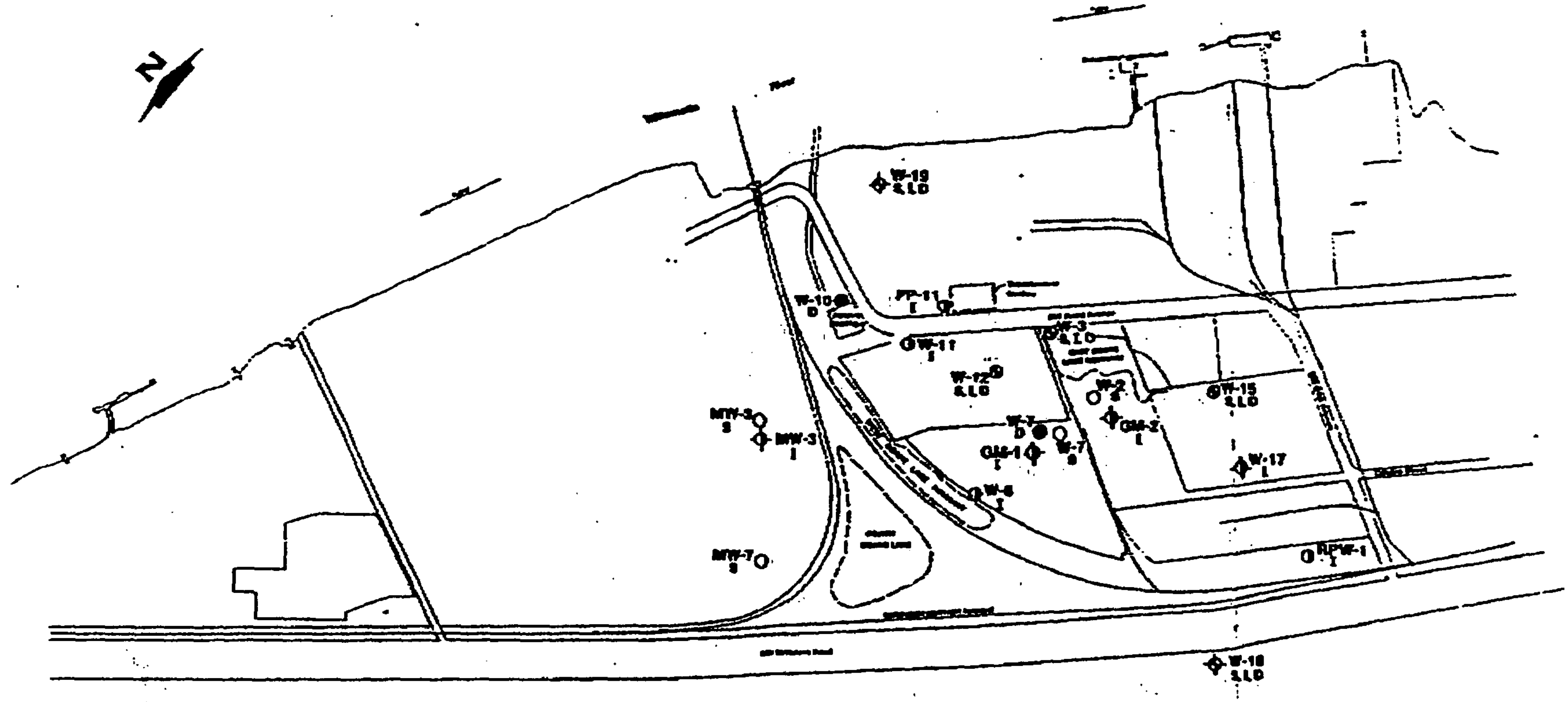
GERAGHTY & MILLER, INC. Environmental Services

PROPOSED MONITORING WELL LOCATION MAP

Doane Lake Area
Portland, Oregon

DRAWN	APPROVED	DATE	PROJECT NUMBER	FIGURE
SAC	aax	Nov. 1989	WA06301	1

Koppers021475



LEGEND

- Shallow Well
- Intermediate Well
- Deep Well
- Nested Well (Shallow/Intermediate/Deep)
- Proposed Well Location

0 300 600 900

Approximate Scale In Feet

Note: S, I and D following designations indicate shallow, intermediate and deep screened horizo

GERAGHTY & MILLER, INC.
Environmental Services

PROPOSED GROUND-WATER SAMPLING LOCATIONS

Doane Lake Area
Portland, Oregon

DRAWN	APPROVED	DATE	PROJECT NUMBER	FIGURE
SAC		Nov. 1995	WA05301	2

- Conduct two constant rate pumping tests in newly installed intermediate alluvial horizon wells. Ground-water samples will be collected from these wells before, during and after the pumping test to assess the water quality.

- Collect one round of ground-water samples from a select number of wells in the Study Area to be analyzed for full scale priority pollutants. The analyses will target the 126 compounds and 24 analytes included on EPA's target compound list (TCL) and target analyte list (TAL). The TCL and TAL include volatile and semivolatile compounds, pesticides, PCB's, metals, and cyanide. All analyses will be conducted following contract laboratory program (CLP) procedures by a government approved CLP laboratory. Refer to Tables 1 and 2 for a listing of the chemical constituents to be tested for, as well as CLP contracted detection limits. Sulfate will also be analyzed for following EPA approved method 9038. Field measurements of pH, temperature and conductivity will be made and recorded at the time of sampling. Shallow wells to be sampled are W-2 S, W-3 S, W-7 S, W-12 S, W-15 S, MW-3 S, MW-7 S, W-18 S, and W-19 S. Intermediate wells to be sampled are RPW-1 I, W-3 I, W-8 I, W-11 I, W-12 I, W-15 I, PP-11 I, W-17 I, W-18 I, W-19 I, MW-3 I, GM-1 I and GM-2 I. The deep wells to be sampled are W-3 D, W-7 D, W-10 D, W-12 D, W-15 D, W-18 D and W-19 D. The location of wells to be sampled may be varied slightly by Geraghty & Miller based upon its proposed hydraulic analysis. Refer to Figure 2 for location of wells to be sampled. Standard quality control procedures will be followed to ensure data quality. Field duplicate blanks and equipment blanks will be collected and analyzed for every twenty ground-water samples collected. Trip blanks will be provided for each cooler containing samples to be delivered to the laboratory.

- Collect one surface-water sample from each of the East, West and North Doane Lake remnants. The surface-water samples will be analyzed for the same chemical constituents as the ground-water samples following the same analytical procedures. Field measurements of pH, temperature and conductivity will be recorded at the time of sampling.

Reporting Activities

Monthly reports will be submitted to ODEQ, which summarize investigation activities during the previous month. It is anticipated that, after approval of a work plan, the field activities described in the previous section and all associated reporting can be completed in approximately eight to ten months.

After field activities are completed, data will be compiled and analyzed. All of the field and laboratory data obtained during the investigation, as well as a description of data collection procedures, will be included in a final ground-water investigation report. The report will include figures illustrating soil stratigraphy, well construction details, the distribution of significant chemical constituents, and potentiometric maps of ground-water elevations measured in the shallow, intermediate, deep and basalt wells. A discussion of conclusions derived from evaluation of all of the data will also be provided in the report.

TABLE 1
USEPA INORGANIC TARGET ANALYTE LIST (TAL)

Analyte	Detection Limit*	Analyte	Detection Limit*
Aluminum	200	Antimony	60
Arsenic	10	Barium	200
Beryllium	5	Cadmium	5
Calcium	5000	Chromium	10
Cobalt	50	Copper	25
Iron	100	Lead	3
Magnesium	5000	Manganese	15
Mercury	0.2	Nickel	40
Potassium	5000	Selenium	5
Silver	10	Sodium	5000
Thallium	10	Vanadium	50
Zinc	20	Cyanide	10

* Detection limits are listed in parts per billion (ug/L).

All analyses shall be preformed in accordance with methods described in USEPA Contract Laboratory Program's "Statement of Work for Inorganic Analysis Multi-Media Multi-Concentration", dated August 1988.

Koppers021479

TABLE 2
USEPA ORGANIC TARGET COMPOUND LIST (TCL)

VOLATILES

Compound	Detection Limit*	Compound	Detection Limit*
Chloromethane	10	Bromomethane	10
Vinyl Chloride	10	Chloroethane	10
Methylene Chloride	5	Acetone	10
Carbon Disulfide	5	1,1-Dichloroethene	5
1,1-Dichloroethane	5	1,2-Dichloroethene (Total)	5
Chloroform	5	1,2-Dichloroethane	5
2-Butanone	10	1,1,1-Trichloroethane	5
Carbon Tetrachloride	5	Vinyl Acetate	10
Bromodichloromethane	5	1,2-Dichloropropane	5
cis-1,3-Dichloropropene	5	Trichloroethene	5
Dibromochloromethane	5	1,1,2-Trichloroethane	5
Benzene	5	trans-1,3-Dichlorpropene	5
Bromoform	5	4-Methyl-2-pentanone	10
2-Hexanone	10	Tetrachloroethene	5
Toluene	5	1,1,2,2-Tetrachloroethane	5
Chlorobenzene	5	Ethyl Benzene	5
Styrene	5	Xylenes (Total)	5

SEMIVOLATILES

Compound	Detection Limit*	Compound	Detection Limit*
Phenol	10	bis(2-Chloroethyl) ether	10
2-Chlorophenol	10	1,3-Dichlorobenzene	10
1,4-Dichlorobenzene	10	Benzyl alcohol	10
1,2-Dichlorobenzene	10	2-Methylphenol	10
bis(2-Chloroisopropyl)ether	10	4-Methylphenol	10
N-Nitroso-di-n-dipropylamine	10	Hexachloroethane	10
Nitrobenzene	10	Isophorone	10
2-Nitrophenol	10	2,4-Dimethylphenol	10
Benzoic acid	50	bis(2-Chloroethoxy) methane	10

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TABLE 2 (cont'd)
USEPA ORGANIC TARGET COMPOUND LIST (TCL)

SEMIVOLATILES (cont'd)

Compound	Detection Limit*	Compound	Detection Limit*
2,4-Dichlorophenol	10	1,2,4-Trichlorobenzene	10
Naphthalene	10	4-Chloroaniline	10
Hexachlorobutadiene	10	4-Chloro-3-methylphenol (para-chloro-meta-cresol)	10
2-Methylnaphthalene	10	Hexachlorocyclopentadiene	10
2,4,6-Trichlorophenol	10	2,4,5-Trichlorophenol	50
2-Chloronaphthalene	10	2-Nitroaniline	50
Dimethylphthalate	10	Acenaphthylene	10
2,6-Dinitrotoluene	10	3-Nitroaniline	50
Acenaphthene	10	2,4-Dinitrophenol	50
4-Nitrophenol	50	Dibenzofuran	10
2,4-Dinitrotoluene	10	Diethylphthalate	10
4-Chlorophenyl-phenyl ether	10	Fluorene	10
4-Nitroaniline	50	4,6-Dinitro-2-methylphenol	50
N-Nitrosodiphenylamine	10	4-Bromophenyl-phenylether	10
Hexachlorobenzene	10	Pentachlorophenol	50
Phenanthrene	10	Anthracene	10
Di-n-butylphthalate	10	Fluoranthene	10
Pyrene	10	Butylbenzylphthalate	10
3,3'-Dichlorobenzidine	20	Benzo(a)anthracene	10
Chrysene	10	bis(2-Ethylhexyl)phthalate	10
Di-n-octylphthalate	10	Benzo(b)fluoranthene	10
Benzo(k)fluoranthene	10	Benzo(a)pyrene	10
Indeno(1,2,3-cd)pyrene	10	Dibenz(a,h)anthracene	10
Benzo(g,h,i)perylene	10		

Koppers021481

TABLE 2 (cont'd)
USEPA ORGANIC TARGET COMPOUND LIST (TCL)

PESTICIDES/PCBS

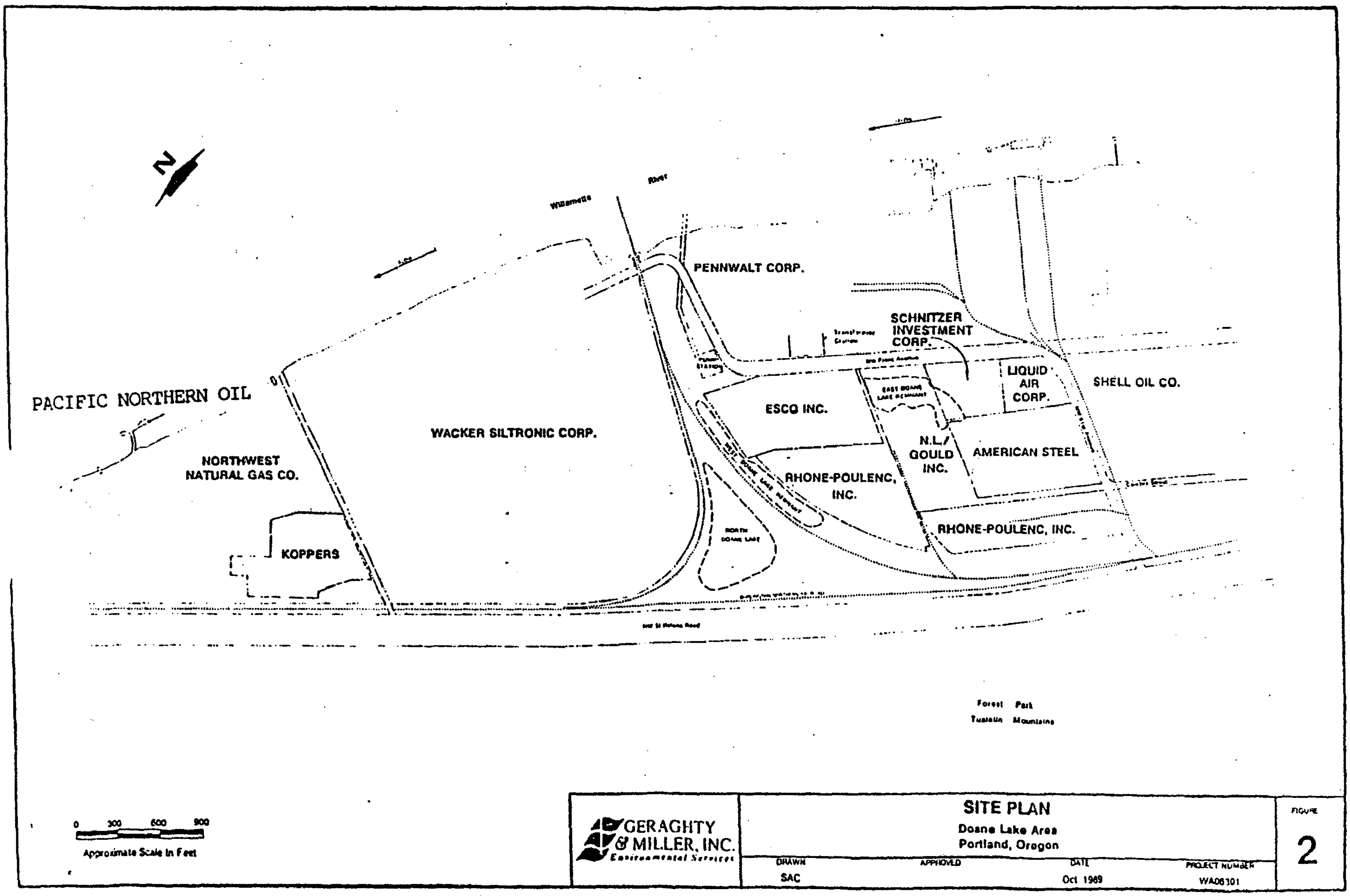
Compound	Detection Limit*	Compound	Detection Limit*
alpha-BHC	0.05	beta-BHC	0.05
delta-BHC	0.05	gamma-BHC (Lindane)	0.05
Heptachlor	0.05	Aldrin	0.05
Heptachlor epoxide	0.05	Endrosulfan I	0.05
Dieldrin	0.10	4,4'-DDE	0.10
Endrin	0.10	Endosulfan II	0.10
4,4'-DDD	0.10	Endosulfan sulfate	0.10
4,4'-DDT	0.10	Methoxychlor	0.5
Endrin ketone	0.10	alpha-Chlordane	0.5
gamma-Chlordane	0.5	Toxaphene	1.0
Aroclor-1016	0.5	Aroclor-1221	0.5
Aroclor-1232	0.5	Aroclor-1242	0.5
Aroclor-1248	0.5	Aroclor-1254	1.0
Aroclor-1260	1.0		

* Detection limits are listed in parts per billion (ug/L).

All analyses shall be proformed in accordance with methods described in USEPA Contract Laboratory Program's "Statement of Work for Organic Analysis Multi-Media Multi-Concentration", dated February 1988.

Koppers021482

ATTACHMENT B
ORDER ON CONSENT
DEQ NO. ECSR-NWR-89-13



Koppers021483

KOPPERS

7540 N.W. ST. HELENS ROAD
PORTLAND, OREGON 97210

TO: Jordan Kirw

COMPANY NAME: K-901

FROM: Koppers / Portland

NUMBER OF PAGES TO FOLLOW: 4

IF YOU DO NOT RECEIVE ALL MATERIAL TRANSMITTED, PLEASE CALL US AT: (503) 286-3681

OUR FAX NUMBER IS: (503) 285-2831

SENT BY: John TIME: 8:30 DATE: 12-7-88

SCHWABE, WILLIAMSON & WYATT
ATTORNEYS AT LAW

Pacwest Center, Suites 1600-1800
1211 S.W. Fifth Avenue
Portland, Oregon 97204-3795
(503) 222-9981

JAMES E. BENEDICT
(503) 796-2957

CABLE ADDRESS "ROBCAL"
TELEX 4937535 SWK UI
TELECOPIER (503) 796-2900

MEMORANDUM

TO: Interested Parties

FROM: James E. Benedict
SCHWABE, WILLIAMSON & WYATT

DATE: December 1, 1988

RE: EPA/DEQ Doane Lake Study Area
PRP Meeting

As you know the DEQ has scheduled a meeting of the Doane Lake Study Area PRPs for 10:00 a.m. on Thursday, December 8, 1988. The often postponed meeting of PRPs will be held at my office following the DEQ meeting. Depending upon the length of the DEQ meeting, we may meet immediately thereafter or choose to reconvene after lunch. The meeting will be held in Conference Room 1650 of our offices at the following address:

Schwabe, Williamson & Wyatt
Suite 1600, PacWest Center
1211 SW Fifth Avenue
Portland, Oregon 97204

JEB:dlf
Enclosure (Interested Parties
Mailing List)

12/05/88 08:20

(Doane Lake Interested Parties Mailing List)

Roger Neu
SCHNITZER INVESTMENT CORP.
3200 NW Yeon Avenue
Portland, OR 97210

LIQUID AIR CORP.
c/o David N. Simon, Manager
Regulatory Affairs
2121 N. California
P. O. Box 8038
Walnut Creek, CA 94576

Eddmond Bolin
NORTHWEST NATURAL GAS
220 NW Second Avenue
Portland, OR 97209

NORTHWEST NATURAL GAS
c/o Dick Bach/Mark Morford
STOEL, RIVES, BOLEY, JONES & GREY
Suite 2300
900 SW Fifth Avenue
Portland, OR 97204

Roger Sherwood
ESCO
P. O. Box 10123
Portland, OR 97210

ESCO
c/o Jim Brown
BOGLE & GATES
222 SW Columbia, Ste. 1400
Portland, OR 97201

ESCO
c/o Joseph A. Darrel
THELEN, MARRIN, JOHNSON & BRIDGES
Two Embarcadero Center
San Francisco, CA 94111

PACIFIC NORTHERN OIL
c/o David Waldschmidt
Suite 200, North Tower
100 West Harrison
Seattle, WA 98111

John Oxford
KOPPERS COMPANY, INC.
7540 NW St. Helens Road
Portland, OR 97229

KOPPERS COMPANY, INC.
c/o Billie Nolan
1401 Koppers Building
Pittsburg, PA 15219

John Pittman
WACKER SILTRONIC
P. O. Box 03180
Portland, OR 97203

WACKER SILTRONIC
c/o Marvin Durning
Attorney at Law
Suite 1522
1411 Fourth Avenue Building
Seattle, WA 98101-2212

Robert L. Ferguson
Plant Manager
RHONE-POULENC AG COMPANY
P. O. Box 10224
Portland, OR 97210-0224

William N. Farran
Environmental Counsel
RHONE-POULENC INC.
CN5266
Princeton, NJ 08543

Richard F. Gitschlag
Environmental Project Manager
RHONE-POULENC INC.
CN5266
Princeton, NJ 08543

Larry Patterson
PENWALT CHEMICAL CORP.
6400 NW Front Avenue
Portland, OR 97210

PENWALT CORPORATION
c/o Claudia Powers
LINDSEY, HART, NEIL & WEIGLER
Suite 1800
222 SW Columbia Street
Portland, OR 97201-6618

Michael Schu
PENWALT CORPORATION
Three Parkway
Philadelphia, PA 19102

Janet D. Smith
Associate General Counsel
NL INDUSTRIES, INC.
Suite 1500
445 Park Avenue
New York, NY 10022

Jim Gibbs
Michael Veysey
Assistant General Counsel
GOULD, INC.
10 Gould Center
Rolling Meadows, IL 60008

KOPPERS

7540 N.W. ST. HELENS ROAD
PORTLAND, OREGON 97210

TO: JORDAN DERN K-901

COMPANY NAME: KOPPERS CO.

FROM: JOHN OXFORD

NUMBER OF PAGES TO FOLLOW: 1

IF YOU DO NOT RECEIVE ALL MATERIAL TRANSMITTED, PLEASE CALL US AT: (503) 286-3681

OUR FAX NUMBER IS: (503) 285-2831

SENT BY: Kelta TIME: 1:30 DATE: 11/28/88

NEIL GOLDSCHMIDT
GOVERNOR

Department of Environmental Quality

811 SW SIXTH AVENUE, PORTLAND, OREGON 97204-1390 PHONE (503) 229-5696

November 23, 1988

Mr. John Oxford
Koppers Company, Inc.
7540 N. W. St. Helens Road
Portland, OR 97229

Re: Meeting Date Change for Consent Order Negotiations for the Doane Lake Study

Dear Mr. Oxford:

The meeting originally scheduled for Thursday, December 1, 1988, has been rescheduled.

You or representatives of your firm are requested to attend a meeting on Thursday, December 8, 1988, at DEQ's offices. The meeting will begin at 10:00 a.m. and will convene in the fourth floor conference room. The intent of the meeting is to initiate discussions that will result in a signed consent order prior to the EPA imposed deadline of March 31, 1989.

If you have any questions or need additional information, please contact Bill Renfroe, Site Response Section, at (503) 229-6900.

Sincerely,

William T. Renfroe, Jr.
William T. Renfroe, Jr.
Site Response Section
Environmental Cleanup Division

WTR:m
SM1779

cc: Chuck Findley-EPA Region X
Al Goodman-EPA 000
Larry Edelman-DOJ
Fred Hansen-OD
Mike Downs-ECD
Tom Miller-SRS
Tom Bispham-RO

Similar letters sent to:
David Simon - Liquid Air Corp.
Edmund Bolin - NW Natural Gas Co.
Roger Sherwood - ESCO
David Waldschmidt - Pacific Northern Oil
John Oxford - Koppers Company, Inc.
John Pittman - Wacker-Siltronic
Bob Ferguson - Rhone-Poulenc
Larry Patterson - Pennwalt Chemical Corp.
Michael Veysey - Gould, Inc.
Janet D. Smith - NL Industries, Inc.

NOV 28

NORTHWEST NATURAL GAS COMPANY

220 N.W. SECOND AVENUE PORTLAND, OREGON 97209

(503) 226-4211

December 2, 1988

John Oxford, Manager
Koppers Company
7540 N. W. St. Helens Rd.
Portland, OR 97210

Dear John:

The enclosed letter was received late yesterday, December 1, 1988.

We have forwarded a copy to counsel and will be looking into the matter as we deem necessary. Please call if you have questions.

Sincerely,

E.L. Bolin, Manager
Land & Claims Department

ELB:b
Enc.

STATE OF OREGON

DEPARTMENT OF ENVIRONMENTAL QUALITY

IN THE MATTER OF: SITE INVENTORY LISTING OF PROPERTY LOCATED IN MULTNOMAH COUNTY, OREGON, NORTHWEST NATURAL GAS, OWNER	DEPARTMENT ORDER AND NOTICE OF OPPORTUNITY FOR CONTESTED CASE HEARING NO. SA-891-62

Pursuant to ORS 466.557, the Director, Oregon Department of Environmental Quality (DEQ), issues this order placing the property described in this order on the inventory of facilities where a release of a hazardous substance is confirmed (Site Inventory).

I.

FINDINGS OF FACT AND CONCLUSIONS OF LAW

A. Northwest Natural Gas is the owner of the following described property:

7540 N.W. St. Helen's Road, Portland

B. On the basis of laboratory data, DEQ has confirmed that

lead
phenol, total
ethylbenzene
napthalene
acenaphthene
fluorene
anthracene
phenanthrene
fluoranthene
pyrene
dibenzofuran

have been "released" at the property within the meaning of ORS 466.540(14).

C. The substance(s)

lead
phenol, total
ethylbenzene
napthalene
acenaphthene
fluorene
anthracene
phenanthrene
fluoranthene
pyrene
dibenzofuran

are "hazardous substances" within the meaning of ORS 466.540(9).

D. The property is a "facility" within the meaning of ORS 466.540(6).

II.

ORDER

Based upon the above Findings of Fact, Conclusions of Law and supporting documentation in DEQ files, DEQ orders that the above-described property shall be placed on the Site Inventory thirty (30) days from the date of receipt of this order by the owner, except as provided for in Section 3.

III.

OPPORTUNITY FOR HEARING

In accordance with ORS 466.557(4), the owner may request a hearing before the Environmental Quality Commission (EQC) or its hearings officer regarding this order. Any request for a hearing must be made in writing and received by the Director of DEQ within fifteen (15) days from the owner's receipt of this order and notice. Any such request must be accompanied by a written answer admitting or denying all factual matters contained in this order, and must affirmatively allege any and all affirmative claims or defenses the owner might have. Any hearing shall be conducted under ORS Chapter 183 and OAR Chapter 340 Division 11.

The Department will attempt to resolve appeals without using a formal contested case hearing. Where this is not possible, a hearing will be scheduled and conducted in accordance with contested case hearing procedures provided for in ORS Chapter 183, as described in the attached order. You may appeal the decision to list the facility on the Inventory if you believe any of the items listed in Section 1. Findings of Fact and Conclusions of Law in the attached order are in error or based on any other factual or legal reasons.

The Inventory is a list of all facilities that have confirmed releases of hazardous substances, regardless of the status of the site. Many sites will need preliminary assessments to determine whether further investigation or cleanup is needed or whether cleanup actions taken previously are adequate. At other sites, investigations or actions have already been taken to address the release. Depending on the status of the site, the Department will determine the appropriate response for each site and schedule follow-up action based on the environmental hazard and available Department resources.

Should you want copies of the state Environmental Cleanup law or Environmental Cleanup rules, please contact Carol Harris at 503-229-6853 or write to:

Environmental Cleanup Division
811 S.W. Sixth Avenue
Portland, Oregon 97204

If you have specific questions about the Inventory or the listing of your facility, please contact the Site Assessment Section of the Environmental Cleanup Division at 503-229-5733.

Sincerely,

Fred Hansen

Fred Hansen
Director

cc: Northwest Region

NEIL GOLDSCHMIDT
GOVERNOR

Department of Environmental Quality

811 SW SIXTH AVENUE, PORTLAND, OREGON 97204-1390 PHONE (503) 229-5696

DEC 1988
RECEIVED
LAND AND CLAIMS

November 30, 1988

CERTIFIED MAIL
RETURN RECEIPT REQUESTED

Northwest Natural Gas
One Pacific Square
220 N.W. 2nd Ave.
Portland, OR 97209

ATTN: Manager of Environmental Affairs

RE: Listing of Koppers Company (Portland), Inc.
on Inventory of Confirmed Releases
DEQ Site Identification No. 62

This letter is to notify you that the facility located at

7540 N.W. St. Helen's Road, Portland

is hereby proposed for listing on the Department of Environmental Quality (DEQ) Inventory of facilities where a release of hazardous substances has been confirmed. Based on a review of records

Northwest Natural Gas

has been identified as an owner of all or part of the facility. While the Department has identified you as an owner for purposes of the Inventory, this is not a determination as to your responsibility for the release or legal liability.

For the purpose of providing public information, the DEQ is required to develop and maintain an Inventory of all facilities where a release of hazardous substances is confirmed by the Department. The development of the Inventory is directed by Oregon Revised Statutes (ORS) 466.557. The Inventory will be submitted to the Governor, the Legislative Assembly and the Environmental Quality Commission on January 15, 1989 and each year thereafter, as specified in ORS 466.557(5).

Attached to this letter is an order by the Department formally stating our decision to list the facility on the Inventory. The facility will be listed on the Inventory unless you appeal the listing by submitting to me a request for a hearing before the Environmental Quality Commission.

This request for hearing must be submitted within 15 days of receiving this notice letter. Otherwise the facility will be listed on the Inventory. Again, the listing of a facility on the Inventory is not a determination that an owner is responsible for the release nor legally liable. If a timely request for hearing is made, the decision to list the facility on the Inventory will automatically be postponed until final disposition of the appeal.

If the owner does not request a hearing within fifteen (15) days of receipt of this order and notice, the owner shall waive the right to a hearing under ORS Chapter 183, except as provided under OAR 137-03-075(6) and (7). In the absence of a timely answer and request for hearing, this order shall become effective, based on a prima facie case made on agency files and records. If the owner is an agency, corporation, or unincorporated association, the owner must be represented by an attorney licensed in Oregon, except as provided under OAR 340-11-102.

DATED this 30th day of November, 1988.

DEPARTMENT OF ENVIRONMENTAL
QUALITY OF THE STATE OF OREGON

BY: Fred Hansen
Fred Hansen, Director

Sent 7/18 NW-5-4
cc: LFF
BSN
Bill Gearla
JW 7/15

BROWN AND CALDWELL
CONSULTING ENGINEERS

RECEIVED
JUN 20 1988
KEYSTONE
Environmental Resources

June 16, 1988

Mr. Ed Bolin
Northwest Natural Gas
220 Northwest Second Avenue
Portland, Oregon 97209-3991

13-1904

Subject: Tetra Tech Contract

Dear Mr. Bolin:

As requested, we have enclosed a copy of the Environmental Protection Agency (EPA) contract with Tetra Tech. The contract is for review of 104 (e) responses and preparation of a scope of work for a Doane Lake area groundwater study. Mr. Bill Renfroe of Oregon Department of Environmental Quality (DEQ) and Mr. Tom Robertson of EPA supplied this copy and the modified schedule. Mr. Robertson is the newly appointed project officer in Portland working under Mr. Dave Tetta in Seattle.

Phase 1 is the <u>information collection and review</u> segment and includes these tasks:

- Evaluate the data provided, based on EPA standards for Quality Assurance/Quality Control (QA/QC).
- Clarify past and current activities at each facility.
- Judge whether the industrial operation in question uses and/or produces hazardous substances that may affect the water in the Doane Lake area.
- Categorize the likelihood of each facility's contribution to contamination in the Doane Lake area.

Phase 2 is the <u>development of a scope of work</u> for the groundwater and surface water investigation of the Doane Lake area. The primary objective of the scope of work is to characterize the hydrogeology of the Doane Lake area, with emphasis on:

- Identifying the full extent of lead migration from the Gould site.
- Identifying other contamination that might affect remedial decisions on treating lead contamination.

Tetra Tech has committed to completing the draft scope of work by July 11, 1988, and completing the final scope of work by July 25, 1988. Consent agreement negotiations between EPA and the involved parties are tentatively scheduled for August.

Our contact with the various involved parties has detected a widespread state of indecision about commitment to a group effort to respond to the EPA plan. As difficult as it may be, the involved parties must act as a group to:

<u>Control the Project</u> - The direction, emphasis and detail of any environmental investigation is controlled by the managing entity. **Should that be you or EPA?**

<u>Develop an Effective Bargaining Position</u> - After Tetra Tech develops a scope of work to characterize the hydrogeology of the Doane Lake area, EPA will come to your group to begin negotiations on a consent agreement. You may establish a more favorable agreement with EPA by active involvement in the entire process. **Would a cohesive group be more effective at the negotiations?**

<u>Obtain Favorable Cleanup Standards</u> - The determination of cleanup criteria has a dramatic effect on the total costs incurred. By taking control of the study, you can affect the final cleanup standards in two ways: (1) you can prevent the expansion of the superfund site; and (2) you can be responsible for the selection and interpretation of applicable or relevant and appropriate requirements (ARARs) of federal laws and more stringent promulgated state laws. **Do you want the cleanup criteria set without your input?**

The time to act is now, before EPA presents you with Tetra Tech's scope of work as the basis of their proposed consent agreement. We propose a scope of services to <u>provide technical support</u> for you as you <u>prepare for negotiations with EPA</u>. The scope includes:

- Review 104 (e) responses.
- Facilitate favorable review of existing data by Tetra Tech with regard to EPA QA/QC.
- Track Tetra Tech's progress and report the implications of their findings to the group.

- Assist the group of involved parties to prepare for consent agreement negotiations.

The costs of these review and coordination services are flexible and will be proportional to the level of detail you require.

Please call Mr. Jonathan Snell or me if you or any of the other involved parties have any questions.

Very truly yours,

BROWN AND CALDWELL

Robert M. Allender

Robert M. Allender
Manager, Hazardous Materials

RMA:has
Enclosure

cc: Mr. Jordan Dern, Keystone Environmental (Koppers)
Mr. Robert Ferguson, Rhone-Poulenc
Mr. Tim McGrath, Schnitzer Brothers
Mr. Larry Patterson, Pennwalt
Mr. John Pittman, Wacker Siltronic
Mr. Roger Sherwood, ESCO
Mr. Dave Simon, Liquid Air

Tom Robertson 000

Please type. Signatures and dates must appear clearly on all copies. Please read Instructions on the reverse.

United States Environmental Protection Agency
OWPE/Contracts Management Section (WH-527)
Washington, DC 20460

EPA Technical Enforcement Support at Hazardous Waste Sites

1. Funding: [x] CERCLA [ ] RCRA [ ] Other	2. TES Number: 4	4. Work Assignment Number: C10004
	3. Contract Number: 68-01-7351	5. [x] Original; Amendment Number [ ]
6. Account Number (for 'Other')	7. Prime Contractor Name: Jacobs Engineering	8. Priority: [x] Normal [ ] Expedite* [ ] Emergency*
9. Site/Facility or Project Name: Gould, Inc.	10. Location (City or County): Portland	11. State: OR; 12. Region/HQ: 10
13. EPA Site/Facility ID Number: ORD095003687	14. NPL Site (Final or Proposed List): [x] Yes [ ] No	15. RCRA Facility: [ ] Yes [ ] No
16. CERCLA Only: FMS Site/Spill ID Number: OB23	17. CERCLIS OP Unit No.: 02	18. CERCLIS/Event/Enforcement Activity/NSS: 2101, 1701 FN02, NSS

19. Purpose

- [x] Initiate New Work Assignment
- [ ] Work Plan Revision*
- [ ] Notification of a Change in WA Manager
- [ ] Cancel Work Assignment
- [ ] Work Plan Approval
- [ ] Revised Work Plan Approval
- [ ] Disapprove Work Plan (Contractor will immediately stop work)
- [ ] Work Assignment Revision
- [ ] Change Period of Performance*
- [ ] Close Out Work Assignment (All final deliverables received)

20. Statement of Work Summary (SOW) (Attach a Detailed SOW) (See Reporting Requirements)

21. Task Type (Must identify task type and number according to TES User's Guide to show activity is within the overall TES contract SOW): Review of Documents - evaluate and record 104(e) responses

22. Task Number: 15

23. Summary/Contents

Enforcement Support for the Doane Lake operable unit of the Gould, Inc. NPL site. See attached Statement of Work.

RECEIVED
APR 1 3 1988
OREGON OPERATIONS OFFICE
EPA-REGION 10

24. Base Period	LOE	Cost/Fee	25. Option Period	LOE	Cost/Fee
Previously Approved			Previously Approved	-0-	-0-
This Action			This Action	900	50,000
Total			Total	900	50,000

26. Period of Performance		Period of Performance	
From: Effective date below (#41)	To	From: Effective date below (#41)	To: September 30, 1988
(closeout date not to exceed base period ending date)		(closeout date not to exceed contract end date)	

27. Number of Pages To Follow (Including SOW): 6

28. Reference Information: [x] Attached [ ] Transmitted Separately [ ] Pick Up From

29. Reporting Requirements: [ ] Briefing(s) [ ] Letter Report [x] Draft Report [x] Final Report** [x] Other

These deliverables will be treated as Enforcement Confidential unless otherwise specified.

30. Initiator: Work Assignment Manager (WAM): David Tetta/Tom Robertson (signature)	31. Address: EPA Region 10, 1200 Sixth Ave. (HW-113), Seattle, WA 98101	32. Date; 33. Phone No. (FTS): 399-2138; 34. Phone No. (Off-Net): 206 442-2138
35. Approval: Rgnl Proj Officer or HQPO (RPO/PO): Kathryn M. Davidson (signature)	36. Address: same	37. Date: April 8, 1988; 38. Phone No. (FTS): 399-1088; 39. Phone No. (Off-Net): 206 442-1088
40. Contracting Officer (CO)		41. Date (Effective Date)
42. Contractor Acknowledgement of Receipt (Signature and Title)		43. Date

EPA Form 9100-1 (2-88)

*Justification required in comment section.
**30 day minimum required between draft and final report.

44. Copy Distribution: White - CO; Green - Contractor; Blue - Regional PO; Goldenrod - WA Manager; Photocopy - HQ PO

ENVIRONMENTAL PROTECTION AGENCY

TECHNICAL ENFORCEMENT SUPPORT
AT
HAZARDOUS WASTE SITES

TES IV

WORK PLAN FOR
CONTRACT #
WORK ASSIGNMENT #

DOANE LAKE AREA
PORTLAND, OREGON
U.S. EPA REGION 10

TETRA TECH, INC.
PROJECT NUMBER

CONTENTS

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1.0 INTRODUCTION

The Doane Lake Area covers approximately 120 acres in Northwest Portland on the banks of the Willamette River. The area is heavily industrialized with contributions of waste materials to the groundwater, surface water and soil. The waste materials include: metals, organics, caustics and acids. The Gould NPL site is associated with the Doane Lake area.

The U.S. Environmental Protection Agency (EPA) has identified 10 Potentially Responsible Parties (PRP's) and has issued, on February 18, 1988, notice and information request letters under the provisions of Section 104 of the Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA), 42 U.S.C. 9604.

One purpose of this assignment is for the Contractor to provide technical assistance for review and analyses of documents received in response to these letters. The overall objective of the project is to identify the data gaps in relation to the known information on groundwater and surface water contamination at the NL/Gould superfund site. Another purpose of this assignment is for the Contractor to write the Scope of Work for the Phase I Remedial Investigation (RI) Sampling Plan, Quality Assurance/Quality Control (QA/QC) Project Plan and the Health and Safety Plan for Doane Lake.

2.0 PROJECT APPROACH

The Contractor is needed to provide technical support for the Doane Lake site. This activity involves review and follow up of 104e responses, integration of these responses in the development of a scope of work, and coordinating these efforts with EPA and ODEQ. The work will be performed based on information supplied by the U.S. EPA Region X and discussions with Tom Robertson, the EPA Project Officer.

This assignment is identified as Enforcement Confidential. The information compiled for this project may be used in enforcement proceedings and strict document control is necessary. The Contractor will maintain document control including: a log-in procedure monitored by the Contractor's Work Assignment Manager and storage of documents in a locked room with locked file cabinets.

EPA will provide the Contractor with copies of existing documents as relate to the Doane Lake Area in general and the Gould NPL site specifically.

Phase 1

Based upon responses received by EPA to the notice and information request letters, the Contractor is asked to determine which responses have fully answered the information requests in the notice letter, identify all PRP responses which do not fully answer the questions and follow-up via telephone conversations on those who submitted an incomplete response. The following specific tasks will be performed:

1) Contractor will review responses received by EPA and evaluate the information based on EPA based QA/QC requirements. The data will be broken down as to whether it is Level A (quantitative data) or level B (qualitative data, not meeting EPA's requirements).

2) Contact, if necessary, each PRP by telephone, and inquire as to:

   a) Past and current activities and each type of facility on premises and operations (if response does not provide this information);

   b) Clarification of answers that are unclear. Telephone communications with the PRP's must be fully documented.

3) Review all responses received by EPA and all information obtained above (1 and 2). This will be completed by persons with professional knowledge of industrial processes and chemical characteristics. This person will judge whether the type of industrial operation in question uses and/or produces hazardous substances that might impact groundwater or surface water contamination beneath their site and the general Doane lake area.

4) Contractor will present in writing an indication of high, medium, or low priority for likelihood of the facility's hazardous substance/waste contribution to contamination beneath their site and in the general Doane lake area and an indication as to whether the data provided is Level A or Level B.

5) The contractor will meet bi-weekly via a conference call with the Oregon Department of Environmental Quality (ODEQ) personnel and the EPA Project Officer to discuss potential problems and/or questions that arise. The contractor will provide a computer generated bi-weekly progress report. A standard meeting time will be set by the EPA Project Officer within a week of the start of the contract date.

Phase 2

Based on the work performed under Phase 1, Tetra Tech will develop a scope of work for the groundwater and surface water investigation of the Doane Lake area.

Specific objectives of the scope of work include: characterize the hydrogeology in the Doane Lake Area, especially with regards to identifying data gaps in relation to the NL/Gould RI/FS and 104e responses; identifying the full extent of lead migration from the Gould site; and identifying other contamination that might affect remedial decisions on treating lead contamination.

3.0 PROJECT DELIVERABLES

Five unbound copies of each of the following products are deliverables under this work plan:

Report covering documentation requirements of Phase 1.4.

Draft Scope of Work

Final Scope of Work

4.0 WORK SCHEDULE

The project team will maintain contact with the EPA and ODEQ Project Officers and meet as required in Section 2. EPA will provide a one week turn around on all draft documents to meet the project schedule. The timeline for project activities is listed below:

DELIVERABLE	SCHEDULE	New Schedule Per Bill Renfroe 6/13/88
Phase 1		
EPA provision of information	April 25	June 13
First Bi-Weekly meeting	by April 29, 1988	June 17
Phase 2		
Draft Scope of Work	June 10, 1988	July 11
Comments from EPA on Scope of Work	June 17, 1988	July 18
Final Scope of Work	July 1, 1988	July 25

5.0 COSTS

Estimate costs for this work are as follows:

Estimated total hours:	900	Same
Estimated total cost:	$50,000	

The Contractor shall notify EPA when 600 hours have been expended on this task.

Negotiations with PRPs sometime in August

RHÔNE-POULENC INC.

P.O. Box 125 - Black Horse Lane - Monmouth Junction, New Jersey 08852 - Telephone: (201) 297-0100 - Telex: 844527

DATE: 6.29.88

TO: JORDAN M. DERN

LOCATION: KEYSTONE

FAX NUMBER: 412/227-2436

* * * * LEGAL DEPARTMENT FAX NO. (201) 821-2787 * * * *

FROM:

( )	JOHN P. DONAHUE	(201) 821-3377
(X)	WILLIAM N. FARRAN, III	(201) 821-3533
( )	JOHN M. IATESTA	(201) 821-3366
( )	PAUL J. JUETTNER	(201) 821-3477
( )	BARBARA A. MOORE	(201) 821-3451

TOTAL NUMBER OF PAGES INCLUDING THIS SHEET: 7

MESSAGE

If you have any trouble receiving this transmission, please call (201) 821-3379 (Gladys), (201) 821-3523 (Charlye) or (201) 821-3484 (Kim)

PLEASE NOTE:....LEGAL DEPARTMENT HAS THEIR OWN FAX NUMBER. (201) 821 - 2787

RHÔNE-POULENC

RHÔNE-POULENC INC.

P.O. Box 125 - Black Horse Lane • Monmouth Junction, New Jersey 08852 • Telephone: (201) 297-0100 • Telex: 844527

LEGAL DEPARTMENT
William N. Farran III
Environmental Counsel
(201) 821-3533

June 29, 1988

See Distribution

RE: NL/Gould Superfund Site Groundwater Study

The plant manager of our Portland facility, Bob Ferguson, called me the other day with the suggestion that I draft a brief description of the proposal which has been discussed among various industry members interested in the captioned study, for the retention of a joint consultant to review existing data and propose to EPA a cost-effective work plan which is consistent with the objectives stated by EPA for a groundwater study. Bob suggested that such a draft might help crystallize the proposal and gain the agreement of necessary parties.

The following is a draft of our understanding of the joint industry effort:

(1) Candidate members of the Industry Group are NL Industries, Inc., Gould Inc. and all other parties identified as potentially responsible parties ("PRP's") by EPA in EPA's February 1988 information requests under §104 of CERCLA.

(2) Certain members of the Industry Group met following EPA's announcement that it intends to conduct a groundwater study associated with the NL/Gould Site and will be seeking some form of participation by members of area industry. Many members believe that there is a substantial risk that an agency consultant will have little incentive to propose a cost-effective work plan which is tailored to the environmental objectives at the site. Instead, such members believe that the best approach to achieve a cost-effective plan is for the Group to retain a joint independent consultant whose proposal will have to satisfy the Group's criteria for cost-effectiveness and the agency's criteria for an environmentally sound groundwater investigation at the site.

RHÔNE-POULENC

(3) The joint consultant will be selected by majority vote of all participating members, subject to the veto of any member for cause (e.g. conflict of interest or demonstrated quality of service problems). The consultant will be retained by counsel to one or more participation members.

(4) The scope of work for the joint consultant would include the following:

(a) study existing publicly available information and data in order to assess the necessary scope of work for a groundwater study for the NL/Gould site;

(b) determine how much of the existing data was developed with adequate QA/QC and can be used in the study (thus avoiding duplicate sampling cost);

(c) develop the most cost-effective groundwater investigation work plan to achieve EPA's stated objective for the study:

"Specific objectives of the scope of work include: characterize the hydrogeology in the Doane Lake Area, especially with regards to identifying data gaps in relation to the NL/Gould RI/FS and 104e respones; identifying the full extent of lead migration from the Gould site; and identifying other contamination that might affect remedial decisions on treating lead contamination."

(5) It is preliminarily estimated that the cost of the scope of work is between $25,000 and $50,000. As the development and proposal of a cost-effective work plan which is tailored in scope and geographic extent to meet the EPA stated study objectives is in the mutual interest of each member of the Industry Group, the cost of the joint consultant will be divided equally among the members. Initial contributions will be $5,000 for each member.

(6) A working committee of members of the Industry Group will be responsible for day-to-day direction of the joint counsultant's activities, administering the project generally, and handling routine correspondence and contacts with the agencies. It is proposed that one representative from each of the following companies be on the working committee: Gould Inc., NL Industries, Inc., Northwest Natural Gas Company, Pennwalt Chemical Co. and Rhone-Poulenc Inc.

(7) Once the joint consultant produces the groundwater study workplan, the Industry Group will submit the workplan to EPA for consideration.

(8) Any participating member may terminate participation at any time by written notice to the other members. The terminating member will remain responsible for its share of costs incurred to the date of termination, and shall not be entitled to a refund of contributions already made to the Industry Group.

(9) The participation of any party in the cost or development of the workplan shall not be construed as an agreement to participate in the investigation, remedial action, or otherwise as an allocation or admission of liability for conditions at the site. Instead, participation in the design of an agreed workplan is recognized by all members of the Industry Group as being in furtherance of mutual interests to develop a cost-effective plan and avoid confrontation with EPA or litigation over and excessively expensive or overbroad workplan.

* * * * * * * *

Please review the foregoing general description of the joint industry project and call me with your comments. I would appreciate your comments as soon as possible because EPA is moving quickly on this project and has retained a consultant to begin working on a similar assignment. We are informed by EPA that its contract with the EPA consultant may be sufficiently flexible to allow an industry consultant to perform some or all of the tasks. If the project as outlined above (or as amended by your comments) is agreeable to the Group, I would propose a meeting soon to plan accordingly, so that the process of selecting a consultant and authorizing work can begin immediately.

Very truly yours,

William N. Farran, III

WNF/cm

DISTRIBUTION NL/GOULD SITE GROUNDWATER STUDY:

<u>ESCO Corporation</u>

Roger Sherwood
ESCO Corporation
P. O. Box 10123
Portland, OR 97210
503/778-6335
FAX: 503/778-6833

<u>Gould, Inc.</u>

Michael C. Veysey, Esq.
Gould, Inc.
10 Gould Center
Rolling Meadows, IL 60008
312/640-4000
FAX: 312/640-4072

<u>Keystone Environmental Resources, Inc. (Koppers)</u>

Jordan M. Dern
Keystone Environmental
Resources, Inc.
436 Seventh Avenue, Suite 1940
Pittsburgh, PA 15219
412/227-2207
FAX: 412/227-2436

<u>Northwest Natural Gas Company</u>

Edmund L. Bolin
Northwest Natural Gas Company
220 N. W. Second Avenue
Portland, Oregon 97209
503/226-4111 Ext. 3540
FAX: 503/273-4824

<u>NL Industries, Inc.</u>

Janet D. Smith, Esq.
3000 North BLT East
Houston, TX 77032
212/421-7204 - Smith
FAX: 212/721-7209

James E. Tracewski
NL Industries, Inc.
P. O Box 1090
Hightstown, New Jersey 08520
609/443-2329
FAX: 609/443-2329

Pacific Northern Oil Co.

George Markwood
Pacific Northern Oil Co.
7900 N.W. St. Helens Rd.
Portland, OR 97210
503/286-9621
FAX: 503/286-9794

Pennwalt Chemical Corp.

Claudia K. Powers, Esq.
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Rhone-Poulenc Inc.

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James E. Benedict, Esq.
Schwabe, Williamson & Wyatt
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1211 Southwest Fifth Avenue
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Schnitzer Investment Corp.

Timothy C. McGrath
The Schnitzer Group
3200 N. W. Yeon Avenue
P. O. Box 10047
Portland, OR 97210
503/224-9900
FAX: 503/323-2793

Wacker Siltronic Corporation

John L. Pittman
Wacker Siltronic Corporation
P. O. Box 03180
7200 N. W. Front Ave.
Portland, OR 97229
503/243-2020
FAX: 503/243-0052

NW-5-4 file

KEYSTONE
ENVIRONMENTAL RESOURCES, INC.

Phone: 412/227-2694 436 Seventh Avenue, Suite 1940, Pittsburgh, PA 15219 Fax: 412/227-2436

June 14, 1988

CERTIFIED MAIL
Return Receipt
Requested

Mr. Ed Bolin
Northwest Natural Gas
220 N.W. Second Avenue
Portland, OR 97209

Dear Mr. Bolin:

Following the conference call on May 23, 1988, with U.S. EPA and Oregon DEQ and the subsequent conference among the Doan Lake PRP's, I took your proposal for the funding of an outside consultant to review records and prepare a work plan back to Koppers' management. In light of the discussion with U.S. EPA, Koppers' position remains that it should not be asked to participate in funding the preparation of the work plan for the reason stated in my letter of April 7, 1988, a copy of which is attached for your convenience.

Once again, we reiterate that this position neither precludes nor commits Koppers to future participation but that active participation at this time is inappropriate. Koppers remains willing to sit as an observer to the committee.

Sincerely yours,

Jordan M. Dern

Jordan M. Dern
Senior Program Manager
Koppers Industrial & Foundry Products

JMD/mrw
Enclosure

cc: William Farran III - Rhone Poulenc, Inc.
Roger Sherwood - ESCO Corp.
Tom McGrath - Schnitzer Investment Corp.
John L. Pittman - Wacker Siltronic Corp.
James Tracewski - NL Industries, Inc.
Richard Bach - Stoel Rives Boley Jones & Grey
Robert Ferguson - Rhone Poulenc, Inc.

bcc: J. M. Blundon
L. F. Flaherty
J. Oxford

KEYSTONE
ENVIRONMENTAL RESOURCES, INC.

Phone: 412/227-2694 436 Seventh Avenue, Suite 1940, Pittsburgh, PA 15219 Fax: 412/227-2436

April 7, 1988

CERTIFIED MAIL
Return Receipt
Requested

Mr. Ed Bolin
Northwest Natural Gas
220 NW Second Avenue
Portland, OR 97209

Dear Ed:

Following our meeting on March 29, 1988, I took the committee proposal of hiring a consultant for the purpose of reviewing existing data to Koppers management to determine their willingness to participate in this early phase of the study. After careful consideration, Koppers feels not only that it should not participate but also that it should not be even asked to participate for a number of reasons; including, but not limited to the following:

1. Koppers area is small - It occupies only about 4 acres of the proposed 400 acre study site.

2. Its history is short - Koppers began operation in 1966. For most of its life it has served as a short term storage terminal.

3. No data is available - Unlike many of the other participants, no studies have been performed on Koppers site, thus there is no benefit to Koppers of the data reduction effort by CDM.

4. The Koppers site is simple. The development of a work plan for the Koppers site alone would be done by assembling existing protocols. There is or no benefit to preparing a work plan prior to meeting with U. S. EPA.

This position does not foreclose Koppers limited participation in the future private investigation at the site nor does it commit Koppers to such participation, but only addresses the issue at hand. Koppers is willing to sit as an observer to the committee and offer its environmental expertise but does not feel that its financial participation is appropriate at this time.

Although they were not available at the meeting, we would appreciate receiving copies of the responses to the 104 letters that were made by each participant. Please let me know if that presents a problem. We look forward to our continued cooperation toward the resolution of this matter.

Sincerely,

Jordan M. Dern

Jordan M. Dern
Senior Program Manager
Koppers Industrial & Foundry Products

JMD/mrw

cc:	William Farran III	- Rhone Poulenc, Inc.
	Roger Sherwood	- ESCO Corp.
	Tom McGrath	- Schnitzer Investment Corp.
	John L. Pittman	- Wacker Siltronic Corp.
	James Tracewski	- NL Industries, Inc.
	Richard Bach	- Stoel Rives Boley Jones & Grey
	Robert Ferguson	- Rhone Poulenc, Inc.

KEYSTONE
ENVIRONMENTAL RESOURCES, INC.

NW

5/23/95

Doan Lake Study

Blunder, Dern -
✓ Marvin Dunning Atty - Wacker John Pitman
✓ Benedict Furgeson / Rhone Poulenc
Joe Dargel,
McCaw Sherwood FCO
Nu Tim McGrath ~~Schnitzer~~ Schnitzer Invest.
Barron, Gotschalk = Rhone Poulenc
Renfro ~~DOE~~ or DEQ - "
✓ Morford, Bdm - NWNG
Tetta - EPA Region X Goodstein legacy
✓ Powers, Patterson Locke, Pennwalt

Pacific No Oil - No contact

★ T - resp to 104(e) + plan
resp from all except K + Pac. No Oil
① initiate contract w/ Tetra Tech + review responses
→ RI of Groundwater in Doan Lake Area
② scope of invest + status of parties is not done -
dist between Gould site + study area - area differences
may redefine dependency on ~~boundaries~~ outcome
③ - diff between PRP + RP
G - ~~Not~~ No list of RPs ~~yet~~ - after 104 review
T - order will be federal order but performed under
state tech lead

Blandon - Koppers rep.

G - not responsive ~~so~~ but still need to respond. Follow up coming to writing

T - What are plans for private work

Benedict - not sure that we know who

T - ~~If~~ EPA plans to ~~go~~ develop work plan

B - PRP's need to rethink

T - if private work plan is developed, TRT will back off area

~~D~~ - Is Gould site being expanded? or is Koppers site near

T - investigation may lead to widening of Gould site

G - Gould not invited to call, but they are part of investigation

Gould developing workplan for lead

- No schedule for TetraTech work - still finalizing

will take 6-8 wks to complete

Not sure how to decide who is RP

T - July meeting will be delayed about 1 month

- -

~~Regulatory ff~~

Response have clarification & some time

- seems to address whether we have lead or affect lead plume cleanup

- we can do better ourselves than Tetratech

Bolm When are we with our contract

Pitman - wait & see

Bolm - wellby & get our contractor others?

Morford } Propose private narrow study
Farron }

B - consult + look at natural + develop
Own study plan + present USEPA
finance by committee
- One w/ approval ~~need to set~~
RFP's need to be defined for work
P don't move RP's until study is concluded
Tetratech tends to be expensive

B - $500/ for review - Tetratech's [illegible]
will be part of future billing

$5000 not for buyout but to limit

- Notify Blum w/i week for next step c/l

Inwood = Clyde

U.S. ENVIRONMENTAL PROTECTION AGENCY
REGION 10
1200 SIXTH AVENUE
SEATTLE, WASHINGTON 98101

FEB 18 1988

REPLY TO ATTN OF: HW-113

CERTIFIED MAIL - RETURN RECEIPT REQUESTED

John Oxford
Koppers Company, Inc.
7540 N.W. St. Helens Road
Portland, Oregon 97229

Re: NL/Gould Superfund Site, Portland, Oregon

Dear Mr. Oxford:

The United States Environmental Protection Agency (EPA) has documented the release or threatened release of hazardous substances at the above referenced site. As a result, the site is now listed on the National Priorities List pursuant to the Comprehensive Environmental Response, Compensation, and Liability Act of 1980, 42 U.S.C. Section 9601 et seq., as amended by the Superfund Amendments and Reauthorization Act of 1986 (to be herein referenced as CERCLA).

A Remedial Investigation (RI) and Feasibility Study (FS) is currently being undertaken at this site by Gould Inc. and NL Industries, Inc., as required by Administrative Order on Consent No. 1085-05-08106, dated August 29, 1985. RI and FS reports are available in the Administrative Record on this site at the Multnomah County Library. The study covers property currently owned by Gould (previously owned by NL Industries) and adjacent properties owned by others. The results of that investigation indicate groundwater contamination in the study area. In order to better evaluate the nature and extent of groundwater contamination underneath the site (the "groundwater unit"), EPA is considering spending public funds to further investigate the contamination at the site and take corrective action for the control of hazardous substances at the site, unless it is determined that such action will be conducted properly by a responsible party.

Responsible parties under CERCLA include the current and past owners and operators of the site, persons who currently lease property at the site or have leased property in the past, and persons who generated the substances or were involved in the transport, treatment, or disposal of them at the site. The EPA has information indicating that you or your company <u>may</u> be a responsible party for the groundwater unit at the NL/Gould site.

KOPPERS CO.
PORTLAND, OR
RECEIVED

FEB 22 1988

Based on EPA's preliminary findings, persons and companies to receive this letter have been identified as potentially responsible parties (PRPs). Inclusion on this list indicates that you or your company may be a responsible party. This list does not constitute a final determination concerning the liability of any party for the hazard or contamination at the site in question.

Under CERCLA, responsible parties may be liable for all monies including interest thereon expended by the government to take necessary corrective action at the site including investigation, planning, and cleanup of the site. Note that use of the word 'site' in this letter refers to the term 'facility' as broadly defined in CERCLA.

EPA and the Oregon Department of Environmental Quality (DEQ) encourage PRPs to perform or participate in the investigation and/or clean-up of the site. The PRPs may participate individually or as a group. In the event that PRPs elect not to participate, each PRP may be liable for site investigation, site clean-up, and for damages to natural resources. These liabilities are joint, strict, and several for all PRPs.

At this time, EPA is seeking to obtain certain information from you. Under the provisions of federal law, specifically Section 104 of CERCLA, 42 U.S.C. 9604, and Section 3007 of the Resource Conservation and Recovery Act (RCRA), 42 U.S.C. 6927, as amended by the Solid Waste Disposal Act Amendments of 1980, the Administrator of the Environmental Protection Agency has the authority to require any person who generates, stores, treats, transports, disposes of, or otherwise handles or has handled hazardous wastes and substances to furnish information related to such wastes and substances.

EPA is also seeking information from you pursuant to Section 9005 of RCRA, 42 U.S.C. 6991(d). This section allows EPA to request information from owners or operators of underground storage tanks as that term is defined in Section 9001(1) of RCRA. Under regulations proposed by EPA on April 17, 1987, an underground storage tank means any one or combination of tanks (including underground pipes connected thereto) that is used to contain an accumulation of regulated substances, and the volume of which (including the volume of underground pipes connected thereto) is 10 percent or more beneath the surface of the ground. "Regulated substances" are defined as either petroleum or substances defined as hazardous under CERCLA (see 52 F.R. 12662).

Pursuant to these statutory provisions, you are hereby requested to respond to the following items:

1. What are the generic names and chemical character of the hazardous substances, as defined under Section 101(14) of CERCLA, that you generate, store, treat, transport, dispose or otherwise handle or have handled at the site? Briefly describe the activities and operations that were carried out by you or your company which involved these hazardous substances.

2. If you do not believe hazardous substances were handled at the site, please briefly describe the activities and operations that were carried out by you or your company.

3. For each hazardous substance identified above, please describe how the substance was handled, when, and the total quantity in weight or volume (estimate if quantity not available).

4. Where was this material stored, and where was it disposed of?

5. What arrangements (if any) were made to transport the hazardous substances away from the site? Who was the transporter of the hazardous substances, and what is his current/previous address?

6. Provide all information you have regarding spills of hazardous substances on or around the site. This should include the generic name and chemical constituents of the material(s) spilled, the quantity of material spilled, clean-up measures taken, the cause for the spill and any other related information.

7. Describe all environmental investigations that have taken place on or around your property/facility. This includes investigations of the physical and chemical characteristics of soil, surface water, sediments, air, and groundwater. This also includes historical evaluations of potential/known contamination. Provide all relevant information including, but not limited to, study design, work plans, quality assurance procedures, sampling procedures, well logs, study results, and data analyses. Raw data need not be provided at this time; data summaries will suffice.

8. Provide all information on all wells on site including the number, locations, associated well logs, date of installation, purpose of installation, and whether the well(s) are being used currently and for what purpose.

9. Provide information regarding all underground storage tanks (see definition above) at the properties owned or leased by you or your company. Specifically, provide a list describing the location, age, construction, contents, and leak detection system or other monitoring system for each tank. Provide a map showing the location of each tank and associated pipelines. Indicate if there are any underground storage tanks no longer in use on the properties.

10. Provide copies of all insurance policies that may provide liability coverage for damages resulting from releases of hazardous substances and/or hazardous wastes. This includes policies that are in effect as well as those effective when hazardous substances were released in the past.

11. For responses under items #4, #6, #7, #8, and #9 above, please provide a map which indicates relevant locations and depths.

Your written answers to these questions must be sent to EPA within thirty (30) calendar days of your receipt of this letter. Your response should include all information you have for the site during the time you or your company owned, operated, or leased the property. Please answer all questions to the best of your knowledge.

Under Section 3008 of RCRA, 42 U.S.C. 6928, failure to comply with this request may result in an order requiring compliance or a civil action for appropriate relief. Section 3008 of RCRA also provides for civil penalties. Pursuant to Section 103 of CERCLA, it is unlawful for any person knowingly to destroy, mutilate, erase, dispose of, conceal, or otherwise render unavailable or unreadable, or falsify any of the above records.

EPA recognizes that this information request is broad in scope. If the information you possess is voluminous, you must respond within the 30 day period as to the availability of all related records, and provide a written description of the type of information available. Specifically, describe the types of records that were maintained by you or your company with regard to the above including the date of the records, the author of the records, the current location of the records, and their current custodian. EPA also requests that arrangements be made to allow designated EPA employees, DEQ employees, and their contractors to review all such documents. Be prepared to present a summary of the information you are submitting at a meeting of all Potentially Responsible Parties to be held in July in Portland. EPA will notify you approximately two weeks prior to the date of this meeting as to the exact location and time.

EPA regulations governing confidentiality of business information are set forth in Part 2, Subpart B of Title 40 of the Code of Federal Regulations Federal Register 36902-36924 (September 1, 1976), as amended by 43 FR 3997 (September 8, 1978), 44 FR 17673 (March 23, 1979), 43 FR 11270 (March 17, 1983), and 50 FR 51663 (December 18, 1985). For any portion of the information submitted which is entitled to confidential treatment, please assert a confidentiality claim in accordance with 40 CFR §2.203(b). If EPA determines that the information so designated meets the criteria set forth in 40 CFR §2.200, the information will be disclosed only to the extent, and by means of, the procedures specified in 40 CFR Part 2, Subpart B. EPA will construe the failure to furnish a confidentiality claim with your response to this letter as a waiver of that claim, and information may be made available to the public by EPA without further notice.

Please respond to EPA within the time frame indicated above. Your written response should be sent to David Tetta, U.S. Environmental Protection Agency, Superfund Branch, 1200 Sixth Avenue, HW-113, Seattle, Washington 98101. Please direct EPA policy and technical questions to David Tetta at (206) 442-2138, and legal questions to Bob Goodstein at (206) 442-8311.

I hope you will give this matter your immediate attention.

Sincerely,

Randall F. Smith

for Charles E. Findley, Director
Hazardous Waste Division

N-1-5-4

KEYSTONE
ENVIRONMENTAL RESOURCES, INC.

Phone: 412/227-2694 436 Seventh Avenue, Suite 1940, Pittsburgh, PA 15219 Fax: 412/227-2436

April 7, 1988

CERTIFIED MAIL
Return Receipt
Requested

Mr. Ed Bolin
Northwest Natural Gas
220 NW Second Avenue
Portland, OR 97209

Dear Ed:

Following our meeting on March 29, 1988, I took the committee proposal of hiring a consultant for the purpose of reviewing existing data to Koppers management to determine their willingness to participate in this early phase of the study. After careful consideration, Koppers feels not only that it should not participate but also that it should not be even asked to participate for a number of reasons; including, but not limited to the following:

1. Koppers area is small - It occupies only about 4 acres of the proposed 400 acre study site.

2. Its history is short - Koppers began operation in 1966. For most of its life it has served as a short term storage terminal.

3. No data is available - Unlike many of the other participants, no studies have been performed on Koppers site, thus there is no benefit to Koppers of the data reduction effort by CDM.

4. The Koppers site is simple. The development of a work plan for the Koppers site alone would be done by assembling existing protocols. There is or no benefit to preparing a work plan prior to meeting with U. S. EPA.

This position does not foreclose Koppers limited participation in the future private investigation at the site nor does it commit Koppers to such participation, but only addresses the issue at hand. Koppers is willing to sit as an observer to the committee and offer its environmental expertise but does not feel that its financial participation is appropriate at this time.

Although they were not available at the meeting, we would appreciate receiving copies of the responses to the 104 letters that were made by each participant. Please let me know if that presents a problem. We look forward to our continued cooperation toward the resolution of this matter.

Sincerely,

Jordan M. Dern
Senior Program Manager
Koppers Industrial & Foundry Products

JMD/mrw

cc: William Farran III - Rhone Poulenc, Inc.
Roger Sherwood - ESCO Corp.
Tom McGrath - Schnitzer Investment Corp.
John L. Pittman - Wacker Siltronic Corp.
James Tracewski - NL Industries, Inc.
Richard Bach - Stoel Rives Boley Jones & Grey
Robert Ferguson - Rhone Poulenc, Inc.

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ENVIRONMENTAL RESOURCES, INC.

Ach

Interoffice Correspondence

To	Larry Flaherty	From	J. M. Dern
Location	K-1750	Location	K-1928
Subject	Soil and Groundwater Investigation	Date	April 6, 1988

On March 29, 1988, a meeting was held in Portland, Oregon of those companies who received the Section 104 letters from U. S. EPA. Those in attendance were Northwest Natural Gas, ESCO, Wacker Siltronics, Rhone-Poulenc, NL Industries, Schnitzer and Koppers. Absent were Pacific Norther Oil (who seemed to have a sidebar agreement with Northwest Natural Gas and Pennwalt). This memo will summarize the discussions held.

Conversations by various members of the group with U.S. EPA Region X makes it clear that U. S. EPA wants the groundwater study to include about 400 acres along the Willamette River well beyond the boundaries of the NL/Gould 30 acre Superfund site. U. S. EPA feels that there is sufficient information based on other studies to declare the area a superfund site but will forego it if a study is done. The request seems to be limited to an Remedial Investigation. No Feasibility Study has been spoken about yet. The agreement for DEQ to study north of the railroad and EPA, south of the railroad has apparently evaporated. U. S. EPA will issue its findings on the need for an investigation in July after a review of the Sec 104 submission.

For Oregon DEQ's part, their interest seems to be to take the lead in the project from U. S. EPA. DEQ does not want the area to be declared a Superfund Site and they feel they can accomplish this task. Oregon DEQ also indicated a willingness to use existing data, although those who have the data agree that it will not in all likelihood meet existing QA/QC requirements.

The responses to the 104 letters have been as follows:

Northwest Natural Gas - Responded by submitting a copy of the CDM workplan for soil and groundwater investigation of NWNG, Wacker and Koppers site..

Wacker - Responded with available data and asked to be let out.

Schnitzer - Responded with available data.

ESCO - Received 30 day extension.

Rhone - Received 30 day extension.

The following companies were identified as potential contributors to the site but were not included among the 104 letter recipients. They will be contacted to invite their participation.

Olympic Pipeline	American Steel
The Railroad	City of Portland
Corp of Engineers	Port of Portland

During the meeting the principle issues among the parties were determined to be 1)that EPA should not declare the area as a superfund site, 2) that the existing data be used, 3) that the existing wells be used and 4) that further investigation should be limited. In the early phases of the meeting the sentiment was that the ball was in U. S. EPA's court and that the participants should wait for a response, which is expected in July. FOr that scenario, the participants would agree in advance to perform the remedial investigation whatever the scope and worry about cost allocation later.

As the discussion continued the feeling of the group changed to the desire to anticipate what U. S. EPA would likely conclude and preplan a study to fill the gaps that may exist in the data base. The decision was made to establish a coordinating committee, which Ed Bolin of Northwest Natural Gas agreed to lead, and for the committee to hire a consultant to review the existing data and create a database of such data and, at the committee's direction, to develop a scope of work to present to U. S. EPA in July. The committee suggested an initial funding level of $5,00Q per participant. Those who have joined include Schnitzer, Wacker, ESCO, Rhone and NW Natural Gas. NL Industries and Koppers did not commit, but both agreed to take the request to their respective managements.

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In summary, the following actions came out of the March 29 meeting:

1. For Dick Bach, the attorney for NWNG, to informally discuss the status of the site with Oregon DEQ and U. S. EPA to find out their current position and to determine what would take place in July.

2. To hire Camp, Dresser, and McKee to review existing data from studies conducted at Rhone, ESCO, Wacker and Schnitzer for the purpose of creating a site-wide database and to meet with the committee for further direction toward the preparation of a scope of work. The committee will meet again once CDM completes its initial task.

Jordan M. Dern

cc: B. Nolan
M. R. Urbassik
J. Oxford

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MEETING RE EXPANDED GROUNDWATER STUDY
AT NORTH DOANES LAKE
3/29/88

Richard D. Bach	Stoel Rives Boley	(503) 294-9213
JOHN L. PITTMAN	WACKER SILTRONIC	241-7514
Roger Sherwood	ESCO	778-6335
JORDAN DERN	KEYSTONE (KOPPERS)	412-227-2207
E.L. Bolin	Northwest Natural Gas	503-638-6475
William N Farran, III	Rhone - Poulenc	201-821-3538
Jim Benedict	" " (Schwabe, et al)	503-222-9981
Bob Ferguson	Rhone-Poulenc	222-3571
TIM McGRATH	SCHNITZER INV. CORP.	224-9900
Mark Schultheis	Dames & Moore	206 523-0560
Jim Tracewski	NL	609-443-2329

NW-S-4

(Bolin – K fin. invol.
financially not assumed,
Tim

NW

0

3/29/88

Attendees: NWNG (Ed Bolin), ESCO (Roy Schumann) (Pac Nat'l - Not) Kopp
(Pennwalt (Not) Wacker (John Pittman), Rhone,
NL Ind (Jim Trazinski), Schnitzer (Lynn Ann), Bach (NWNG)
(DEM)

B - DEQ still looking to keep from expanding Superfund Site
still feel they can
Try to work w/ existing data + around model

K - gone out 104 ltr resp.

E - asked for 30 day extension (most done to Gould)

- NPL listing does not go to AJ of RR detachment

B - concern that EPA will redefine Superfund
Site to include all of GW

W - answered but requested out

B - EPA wants study + seems willing to let go
~~DEQ~~ w/o ~~deal~~ declaring it all Superfund

N - Gould run NE → Wacker → River

(2)

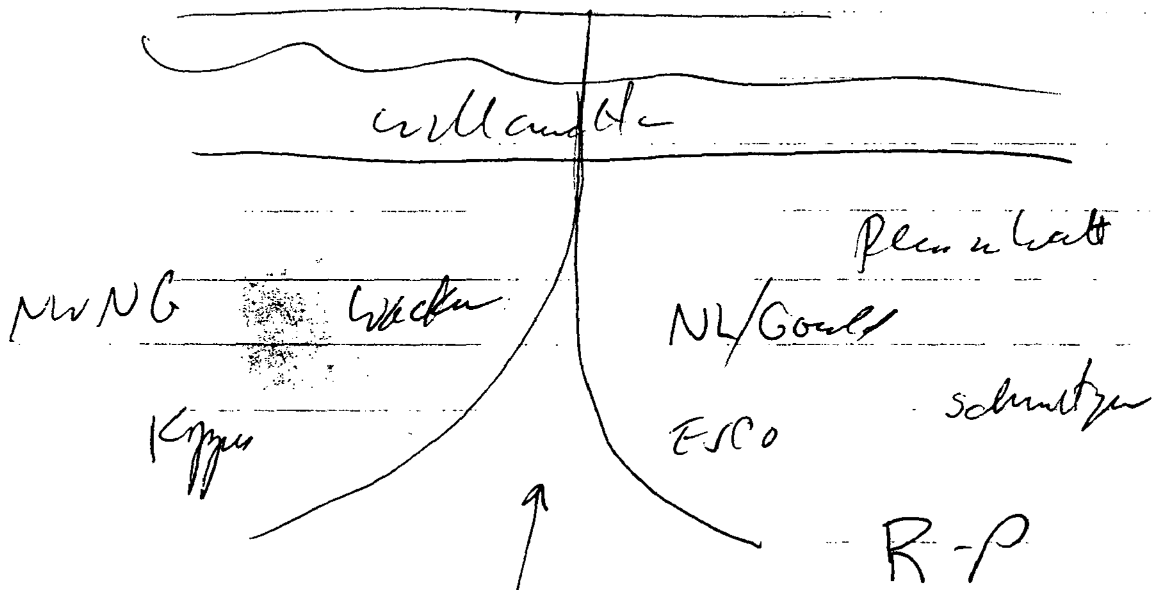
NL - GW study area is 4?0 acres + includes more than lead.

R - got extension to response. Onsite pump + treat in place 9 yrs for pesticides

B - enough data to ~~probably~~ say that area is ~~[illegible]~~ probably contam. given 50 yrs.

N - Study of site by CDM still required?

B - May, but not necessary



At one time there may have been stream along RR

(7)

B - Mtg today - not to design study but organize for future

S - Responded - 5 wells, lime pit

W - DEQ - N of Berm; EPA S of Berm

B - EPA willing to let DEQ lead (per DEQ)

N - responded w/ copy of proposal to EPA. Not comfortable because cannot see involvement with Gould

B - Wait for EPA response before any substantive response is required
But need organization so can respond in good time
Thinks we need to commit to enter into agy w/ DEQ for consent for RI/FS
at same time as negotiated w/ DEQ - we would work on allocation

W - 7 wells so far - not willing to committ to more.

(4)

NL - 400 acres - EPA may want RI
think that this is separate from Gould site

DFM - should prepare first because their thoughts are going to be tougher

B - Do we need to develop plan?

B - Talk to Tetta + Hansen to get sense of direction for July

B - Not sure we should raise issue because they don't know yet

Discussion of how much may be required

K - Push assessment based solution
- Just [illegible] a multi media

B - EPA wants to clean up site to satisfy Congress
EPA may have incentive to put this site aside

8

NL - Gould preference is still on table
ROD out 3/31/88
Cleanup by EPA - 5-7yrs
But get Consent by issuing ROD

R - Should we review existing data?

D+M - Need to do it first + plot

ESCO - Do we need to authorize consultant to
do work

K - not authorized

E - walk in with plan

B - probably for 85 000 per company can prepare
assessment so plans there by July

E, N will kick in;

B - need coordinator to get commitment

CH2MHill, CDM, D+M have worked on site

6

Need to consolidate ~~re~~ early data
Then meet + discuss what gaps are
then get to work plan

Commitments? - Most ~~s~~ will
K probably will not but need to discuss
- Buy in
Work need to be done so it shouldn't matter

Non participation should not stop work

B - Non participants get bit for other
costs that PRP's don't want

N - Bohn will act as coordinator
- Pittman will assist

NL - won't participate - already spent $1.5 M
~~to~~ thinks DTM usage would have been
conflict of interest

(7)

R - thinks NL needs to be involved because
it is NL site

N - same opinion

NL - already spent $, $ in the future
- EPA says they know enough
- No commitment

all present except Pennwalt

In	Out	?
~~Schnitzer~~		NL
Wacker		Koppers ← need to establish
ESCO		
R.P.		
NWNG		

Report from Rhone Poulenc, ESCO, Wacker Schnitzer

CDM as contractor

R - other possible PRP's - Olympic? American Steel
RR ; Port of Portland
City of Portland? ; Corps of Eng

(8)

CDM to digest data
then sit with PRP's to discuss fully
Group to direct further work

Kilamm GW

Attendees -
Non Attendees
RI/no FS
EPA Goals - wants study. Probably call it SF site
4 W acres
more than lead
enough data + expand
DEQ No g bus; EPA south
July
DEQ goals - Keep from expending
- use existing data
- Take lead

Indiv Resp. E - 30 day ext
W - answered
R - 30 day ext
S - responded
N - responded
C

Concerns. EPA does not expand site
- enough data

Our proposal early. send in resp. + wait for EPA
willing + commit to RI/FS - allocation later
anticipate - review data
with level of work plan outline
500 / partic
Schnitzer R.P.
Wacker NWNG } In
Esco
NL, K - ?
Polm - Cond

Action - get sense of agencies
$5000 / partic - CDM review data
from S+J Bridge + Pennwalt
R.
Esco
Wacker
Schnitzer

Other Olympic Pipeline RR CofE
Am Steel City of Port, Port of P

WILLIAM N. FARRAN, III
ENVIRONMENTAL COUNSEL

RHÔNE-POULENC

RHONE-POULENC INC., CN5266, PRINCETON, NJ 08543-5266
TEL. (201) 821-3533 FAX (201) 297-0188

SCHNITZER INVESTMENT CORP.

TIMOTHY C. McGRATH
PROPERTY MANAGER

THE SCHNITZER GROUP
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503/224-9900
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KEYSTONE
ENVIRONMENTAL RESOURCES, INC.

Jordan M. Dern
Senior Program Manager
Koppers Industrial & Foundry Products

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412/227-2207

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JAMES E. BENEDICT
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ATTORNEYS AT LAW

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1211 S.W. FIFTH AVENUE
PORTLAND, OREGON 97204-1082
TELEPHONE (503) 222-9981

R/P
outside counsel

NL

James E. Tracewski
Regulatory Affairs Specialist
Environmental Control Department

NL Industries, Inc.
P.O. Box 1090
Hightstown, New Jersey 08520
Tel. (609) 443-2329

RHÔNE-POULENC AG COMPANY

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PORTLAND, ORE
97210

E. L. BOLIN

MANAGER
LAND AND CLAIMS DEPARTMENT
NORTHWEST NATURAL GAS COMPANY
220 N.W. SECOND AVENUE
PORTLAND, OREGON 97209

(503) 226-4211 / EXT. 3540

Koppers Company, Inc., Legal Services
436 Seventh Avenue, Pittsburgh, F 219
Telephone 412-227-2000
Telex 0866418, Koppersco

NW - 5 - 4

SENT VIA DHL #339321194

KOPPERS

Donald H. Cuozzo
General Counsel
John F. Ramser
Stephen T. Tomko
Thomas Burgunder
Thomas F. Reid
George Carroll
Edward B. Wood
Kenneth W. Kubrick
Mary Dombrowski Wright
Jill M. Blundon
Billie Schrecker Nolan
William F. Giarla

Hobart Richey
Tax Counsel

RECEIVED
MAR 25 1988
Environmental Resources

March 22, 1988

David Tetta
U.S. Environmental Protection
Agency, Superfund Branch
1200 Sixth Avenue, HW-113
Seattle, Washington 98101

Re: NL/Gould Superfund Site
Portland, Oregon

Dear Mr. Tetta:

Koppers Company, Inc. (Koppers) is in receipt of U.S. EPA's request for information letter dated February 18, 1988 in which Koppers is named as a potentially responsible party for the above-referenced site. This request for information letter bases the addition of Koppers as a potentially responsible party on results of investigations conducted as part of a Remedial Investigation (RI) and Feasibility Study (FS) undertaken at this site by Gould Inc. and NL Industries, Inc. which, according to U.S. EPA, indicate that Koppers' Northwest Terminal located at 7540 N.W. St. Helens Road, Portland, Oregon is a source of groundwater contamination detected at the NL/Gould Superfund Site. For the following reasons, Koppers does not believe that it is a potentially responsible party under the federal Comprehensive Environmental Response, Compensation and Liability Act of 1980 (CERCLA).

Section 107 (a) of CERCLA defines a potentially responsible party as including current and former owners and operators of facilities and "(a)ny person who by contract, agreement or otherwise has arranged with another party or entity for transport, storage, disposal or treatment of hazardous substances owned, controlled or possessed by such person at a facility owned or operated

Writer's Direct Dial Number 412-227-2515

by another party." It is without question that Koppers has never had an ownership or operational interest in the NL/Gould Superfund Site. Nor does U.S. EPA contend that Koppers "arranged with another party" for transport, storage, treatment or disposal of hazardous substances from, to or at the NL/Gould Superfund Site. Instead, U.S. EPA relies upon the results of groundwater investigations conducted at the NL/Gould Superfund Site to link Koppers to that site. We are not aware of any precedent under CERCLA for imposing potentially responsible party status upon a company that is not connected with the facility through ownership or operational control or by virtue of having arranged for hazardous substances to be handled at the facility. Indeed, the clear language of the statute requires that a "generator" potentially responsible party must have made arrangements "with another party" for handling of the hazardous substances at the facility. There is no evidence of record that Koppers made any arrangements with anyone to have hazardous substances handled at the NL/Gould Superfund Site.

Accordingly, under both a clear and unambiguous reading of the statute and existing case law, Koppers can not be considered to be a potentially responsible party at the NL/Gould Superfund Site on the grounds that hazardous contituents may have entered the groundwater at the Koppers' Northwest Terminal site and migrated to the NL/Gould Superfund Site. Under these circumstances, we trust that Koppers will not be included as a potentially responsible party for the NL/Gould Site.

Please give me a call if you have any questions or wish to discuss this matter further.

Very truly yours,

Billie S. Nolan

Billie S. Nolan

bcc: J. Batchelder
L. Flaherty
J. Dern

NW-S-3
Sent 3-16
cc: BSN
LFF
MRV
3/16

SUPPLEMENT
TO THE
DRAFT FEASIBLITY STUDY
OF CLEANUP ALTERNATIVES
FOR THE
NL/GOULD SUPERFUND SITE

FEBRUARY 1988

U.S. Environmental Protection Agency (EPA)

INTRODUCTION

The U.S. Environmental Protection Agency (EPA) has prepared this document to supplement the draft Feasibility Study of cleanup alternatives for the NL/Gould Superfund site in Portland, Oregon. The Feasibility Study was done by contractors for NL Industries, Inc. and Gould, Inc., the potentially responsible parties for the site, in response to an administrative order by EPA.

EPA has accepted the draft FS and report as sufficient to provide the information necessary to make a cleanup decision. However, EPA's evaluation and conclusions about the relative merits of the various choices for cleanup differs considerably from those of the contractors (Dames and Moore) for NL and Gould. The Agency's proposed plan is to select Alternative 10C from the Feasibility Study to clean up soils, sediments, and battery casings while deferring a decision on contaminated groundwater until more extensive studies are complete next year. The companies are taking the position that Alternative 2C is the best alternative.

This document includes:

* EPA's Summary of the Draft Feasibility Study — pages 2-7
* EPA's Proposed Plan and Rationale — page 8
* Excerpts from the draft NL/Gould Feasibility Study with **EPA Comments in boldface** — pages 9-36

This summary and evaluation is adapted from the Feasibility Study reports themselves. The summary describes EPA's interpretation of the Feasibility Study results. The excerpts are the companies evaluation of four key alternatives taken directly from Chapter 7 of the Feasibility Study with EPA comments added in boldface type. The purpose is to help the reader identify key differences between the companies' and EPA's interpretation of the information.

EPA will prepare a more detailed evaluation once the Agency considers all comments from the community received during the public comment period, which is scheduled to last until March 18, 1988. The Feasibility Study and other reports discussed in this document are available for review at the following locations:

Multnomah County Library
St John's Branch
7510 N. Charleston Avenue
Portland, Oregon

Oregon Department of Environmental Quality
Remedial Action Section
811 S.W. Sixth Avenue
Portland, Oregon

Linnton Community Center
10614 N.W. St. Helens Road
Portland, Oregon

EPA Library
1200 Sixth Avenue, 10th Floor
Seattle, Washington

EPA SUMMARY OF NL/GOULD REPORT

Purpose of the Feasibility Study

The purpose of the Feasibility Study (FS) was to develop and evaluate a range of remedial action alternatives for the Gould site based on the extent of contamination found on the site during the Remedial Investigation (RI). The alternatives are screened and evaluated, then compared, according to the Superfund regulations. At the end of this process, one alternative is recommended for implementation.

Cleanup Objectives

The Feasibility Study process began with the identification of preliminary remedial technologies applicable to the site. In order to properly identify applicable technologies, remedial objectives for the site were developed. Those remedial objectives are:

1. To protect human health from the effects of contaminants in public drinking water supplies.

2. To protect human health and the environment from detrimental effects of airborne metals contamination.

3. To protect human health and the environment from detrimental effects of contact with contaminated surface water or soils.

4. To protect the water quality of the Willamette River from degrading.

Evaluation of Possible Remedies for Problems at the Site

Cleanup alternatives for this site were evaluated to see if they meet the federal and state criteria in Superfund and other environmental laws, and to evaluate their effectiveness. An extensive list of 30 potential alternatives was assembled for this site and eleven of these were selected for detailed evaluation. Treatment of contaminated groundwater was also considered in a separate evaluation. Each of the alternatives in the Feasibility Study includes a different combinations of possible remedial actions such as:

Monitoring air and groundwater to determine whether any lead or other contamination is moving (migrating) in the environment.

Capping, importing topsoil, and revegetating the surface.

Soil treatment techniques, such as applying lime to reduce the mobility of the lead in the surface soil. Subsurface soil, matte, and sediment treatment would include techniques that would stabilize the materials in a cement-like complex.

Recycling and treatment of the battery casings, which would involve running them through a separation unit to separate out the lead, plastic, lead oxide, and ebonite. Additional treatment, if necessary, to clean these output streams.

Institutional controls, meaning the use of either zoning measures or restrictions on the title to the Gould property to limit access to this site.

The 12 Final Candidate Alternatives in Brief

Alternative 1--No-action alternative.

Alternative GW--Groundwater extraction and treatment.

Alternative 2A--Removal and disposal of surface piles of battery casings; lime application to contaminated soils.

Alternative 2B--Removal and disposal of surface piles of battery casings; capping of contaminated surface soils; regrading of the site and isolation of East Doane Lake.

Alternative 2C--Excavation and separation of surface piles of battery casings, and subsequent off-site management of casings; lime treatment; capping of contaminated surface soils; treatment of surface water; regrading and revegetation of the site.

Alternative 8A--Removal and disposal of surface piles of battery casings and sediments of East Doane Lake; capping of contaminated surface soils; treatment of surface water; regrading and revegetation of the site.

Alternative 8B--Excavation and separation of surface piles of battery casing components, and subsequent off-site management of casings; capping of contaminated surface soils; treatment of surface water; regrading and revegetation of the site.

Alternative 10A--Excavation and separation of all battery casings, and subsequent recycle of some casing components; on-site incineration of non-recyclable components; fixation or stabilization of surface soils, subsurface soils, sediments, and matte; treatment of surface water.

Alternative 10B--Excavation and separation of all battery casings, and subsequent recycle of some casing components; incineration of non-recyclable battery casing components; lime treatment and on-site placement of sediments; treatment of surface water.

Alternative 10C--Excavation and separation of all battery casings, and subsequent recycle of some casing components; off-site disposal of non-recyclable components that fail EP Toxicity; fixation or stabilization of surface soils, subsurface soils, sediments, and matte.

Alternative 21--Excavation of battery casing components and permanent disposal in an on-site RCRA landfill; fixation or stabilization of surface soils, subsurface soils, sediments, and matte; treatment of surface water.

Alternative 25--Permanent disposal in an on-site RCRA landfill of all site contaminated materials, including battery casing components, surface soils, subsurface soils, sediments, and matte; treatment of surface water.

Note on Groundwater

At present, EPA believes that the information currently available on the surface and groundwater at the site is insufficient to make a decision on how to clean up those areas. EPA's proposed plan is to make a decision at this time on cleanup of contaminated soils, sediments, and battery casings, while doing additional studies of surface and groundwater in the area. The proposed study will help determine whether action needs to be taken to deal with the contamination underneath the site, and how that action should be coordinated with other cleanup efforts that are currently going on. The study will also address organic contamination (such as pesticides) as well as lead contamination. The study would begin later this year. EPA has notified several companies in the Doane Lake area that they may be responsible for this contamination and will be working with them to do the study.

Evaluation Criteria for Selecting a Superfund Cleanup

Nine factors will be considered in evaluating the Final Candidate Alternatives: long-term effectiveness and permanence; reduction in toxicity, mobility, or volume; short-term effectiveness; implementability; cost; overall protection of human health and the environment; compliance with applicable or revelant and appropriate requirements (ARARs); state acceptance; and community acceptance. The first seven factors are included in this summary. The final two factors, state and community acceptance, will be evaluated by EPA after the public comment period is complete.

Engineering Studies During the FS and EPA's Evaluation of the Results

As part of the evaluation of the Final Candidate Alternatives, several engineering studies were performed to determine whether the preference for treatment in the law could be met. The engineering studies represented one category (technical feasibility) of one factor used to evaluate the Final Candidate Alternatives. A bench-scale soil stabilization study was performed by Weston Services, Inc. Weston used several different reagents to determine the applicability of the soil stabilization technique to Gould site soils and lake sediments. The results showed that admixtures of Portland cement, cement kiln dust, and lime kiln dust with the soil and sediment at specific increments improved the consistency and structural stability of the soils and sediments, and also reduced the leachability of the contaminated materials to levels generally below hazardous waste designation levels.

Three battery casing separation tests were performed on site materials. One test was performed on equipment manufactured by MA Industries, Inc. and the other two on equipment manufactured by Poly-Cycle Industries, Inc. To conduct each test, approximately 20 tons of representative material was excavated from the site and shipped to locations where equipment manufactured by the two companies is in use. In the case of MA Industries, the test was run on equipment operated by Ace Battery Company of Indianapolis, Indiana. The tests of Poly-Cycle equipment were run at the Poly-Cycle plant in Jacksonville, Texas. For each firm, the process is designed to apply to spent batteries, not to battery components mixed with dirt and mud.

EPA differs from NL/Gould in its evaluation of the results of these studies. EPA's interpretation is that the studies show that the material is recyclable, but that a lot of design work will be required to ensure that any treatment facility brought to the site will work. The companies' position is that the tests show that the materials generally are not recyclable.

Reasonable physical separation of the plastic and ebonite components with some equipment modifications appears to be possible, although the degree of metallic lead contamination of ebonite is high even after separation; therefore, additional work will be required to treat this stream after it leaves the separation plant. This is in addition to the rigorous design requirements that will be involved in transferring this technology to the NL/Gould site.

During the evaluation of alternatives, similar tests were run independently by researchers working on materials from the United Scrap Lead Superfund site near Troy, Ohio. Researchers there performed bench-scale tests using various solutions and mechanical cleaning steps to determine the amenability of lead to be removed from the ebonite material. Although the results of this test are generally favorable, the researchers have concluded that more work is required before the laboratory results could be applied to any field-scale unit.

How Protective of Human Health and the Environment are the Alternatives?

In order to evaluate the alternatives for overall protection of human health and the environment, an endangerment assessment was done for the site. The endangerment assessment examined each alternative's performance under a number of different human and environmental exposure scenarios. Scenarios examined included on-site and off-site residential exposures, as well as on-site and off-site worker exposures. The contaminants examined were lead, arsenic, and cadmium. The health effects of arsenic and cadmium were examined from the standpoint of the risk of cancer, while the health effects of lead were evaluated in comparison to standards that result in no adverse chronic health effects. Aquatic impacts to the Willamette River were discussed in the endangerment assessment as well.

Results from the Endangerment Assessment indicate that Alternatives 1, 2A, and 2B do not provide adequate protection to the environment because of the possibility of excess air emissions and a potential ingestion hazard. The latter was based on assumptions that residences would be located on site, which is clearly a conservative scenario. However, EPA believes that such scenarios are required in order to ensure that public health and environmental quality are adequately protected in making a cleanup decision at this site. Alternative 10C appears to provide the highest degree of long term protection of public health end the environment. However, there are some potential short term impacts associated with the large amounts of contaminated material which would be handled during treatment. Alternative 2C, by comparison, is not as protective in that most of the contaminated material remains on site under a cap that could conceivably be disturbed in the future. In evaluating 2C, EPA also took into account the range of institutional controls available to be applied to the site. As current owner, Gould Inc. has the unilateral right to restrict future use of the property by imposing institutional controls on the property. In addition, common law and statutes of Oregon constitute other types of institutional controls to restrict access to the site and control site uses. However, EPA has concluded that these institutional controls are of questionable effectiveness when so much of the contaminated material remains on site.

EPA'S Preferred Alternative

EPA prefers Alternative 10C because this alternative most effectively satisfies the requirements of Superfund. This alternative would remove all battery casings from the site, treat the surface soil, subsurface soil, and matte, and cap the exposed fill and contaminants, thereby making them unavailable for human contact by inhalation or ingestion.

EPA recommends Alternative 10C at the site based on its complete satisfaction of the five requirements for a remedy under Superfund:

1. it is adequately protective of human health and the environment;
2. it utilizes treatment as a principal element for the reduction of toxicity, mobility, and volume;
3. it satisfies a preference for treatment and resource recovery to the maximum extent practicable;
4. it attains state and federal regulations; and
5. it is cost effective.

Differences Between EPA'S Proposal and NL and Gould's Preferred Plan

NL Inc. and Gould Inc. are proposing Alternative 2C for cleaning up the site. By contrast to Alternative 10C, EPA believes that Alternative 2C fails most of the cleanup requirements in that: (1) it is not adequately protective of human health and the environment because of the potential for continued inhalation and direct contact exposure to contamination at the site; (2) it treats less than 2% of the battery casings and proposes a treatment process for the soil that has not been adequately evaluated; (3) it therefore does not satisfy a the CERCLA preference for treatment and resource recovery to the maximum extent practicable; and, (4) it does not attain all state and federal regulations.

This alternative differs from EPA's proposed alternative in some key areas. EPA's alternative focuses on treating all of the battery casings (about 80,000 tons) while the companies' proposal focuses on treating only those casings that are in piles above the ground (about 1,000 tons). EPA's proposal emphasizes stabilization of all remaining contaminated soils and sediments while the companies' proposal focuses on applying lime to contaminated areas and then capping them. The cost of EPA's proposed plan is estimated at $15 to 20 million compared to an estimated cost of $5,000,000 for the companies' proposal.

EPA'S PROPOSED PLAN FOR THE SITE

EPA's proposed plan is to select Alternative 10C to deal with soils, sediments, and battery casings while deferring a decision on groundwater at the site until further studies are complete. The proposed plan, in simplified form, is to:

- remove battery casings on and beneath the site and treat them for proper disposal of lead, plastic, and other materials;
- treat lead-contaminated soil and sediments with a chemical additive to bind the lead to the soil and keep the contamination from leaving the site;
- continue to monitor groundwater in case extensive lead contamination begins to move off-site (additional controls may be needed if this happens);
- do additional studies of groundwater pollution in the Doane Lake area; and
- monitor air emissions to ensure that lead contamination does not spread off-site during cleanup.

EPA believes that the recommended alternative described here would best protect public health and the environment and meet relevant federal and state requirements. This plan satisfies the five requirements for a remedy under Superfund: (1) it is adequately protective of human health and the environment; (2) it utilizes treatment as a principal element for the reduction of toxicity, mobility, and volume; (3) it satisfies a preference for treatment and resource recovery to the maximum extent practicable; (4) it attains state and federal regulations; and (5) it is cost effective.

What Happens Next?

The EPA Regional Administrator, Robie G. Russell, will select one or more remedies from the alternatives presented in detail in the draft feasibility study. However, no cleanup decision will be made until all comments have been reviewed and considered.

After a cleanup plan is decided upon, EPA will negotiate with the potentially responsible parties to do the work required. The first step will be design and testing of the selected cleanup. This step will probably take six to nine months.

EVALUATION OF ALTERNATIVES 1, 2C, 10C, AND 21

FROM THE

FEASIBILITY STUDY

WITH EPA RESPONSES

The following evaluation compares the companies' evaluation of alternatives 1, 2C, 10C, and 21 with EPA's evaluation. The companies' evaluation is taken directly from Chapter 7 of the Feasibility Report. EPA's responses to the companies evaluation are included for each alternative and for most of the specific criteria. **EPA's response can be distinguished by its boldface type.**

EVALUATION OF ALTERNATIVE 1 - NO-ACTION ALTERNATIVE

The [illegible] tion Alternative would apply no remediation to the site. The alternati[illegible] onsists of monitoring groundwater, air, and surface water to observe the migration of site contaminants.

Short-Term Effectiveness

Under the No-Action Alternative, the three existing high-volume (HIVOL) air monitors on-site would be supplemented with one more. Safety during installation of monitoring equipment is not considered to be an issue. This alternative is rated high for short-term effectiveness.

EPA Response - The alternative is not effective since there is no reduction in risk to public health or the environment.

Long-Term Effectiveness

Results of the Endangerment Assessment analysis of the No-Action Alternative indicate that the potential for inhalation and ingestion of lead under the high-dose cases are unacceptably high. Unacceptably high dose estimates are the result of calculations that focus on ingestion and [illegible]ation of the lead oxide in the waste piles. Since no site remediation [illegible] undertaken, the performance of the No-Action Alternative is judged to [illegible] low. On the other hand, the methods of implementing this alternative [illegible] very reliable. Therefore, the long-term effectiveness of the No-Act[illegible] Alternative is considered moderate.

EPA Response - Again, the alternative is not effective in that it is not protect[illegible] public health and Environmental Quality.

Reduction in Toxicity, Mobility, or Volume

This alternative does not reduce the toxicity, mobility, or vo[illegible] site contaminants. Therefore, the rating of this alternative for redu[illegible] [illegible]xicity, mobility, or volume is low.

[illegible] Response - Agree.

[illegible]ementability

Construction under this alternative involves the installation of air monitors and warning signs. There are no physical impediments to these minimal construction plans, and installation will be performed using standard and proven methods. The materials and equipment needed to implement the No-Action Alternative are readily available. Overall, the implementability of the No-Action Alternative is judged to be high.

EPA Response - Agree

Cost

The costs associated with this alternative are divided into two categories: capital and operating and maintenance. Included in capital costs are installation costs associated with monitoring and indirect costs such as permitting, engineering, design, start-up, and contingency. The second category of cost is operating and maintenance costs including site monitoring and reporting. Operating costs are discounted to present worth for comparison of alternatives. Detailed cost breakdown information is provided in Appendix C.

	Capital Cost	O&M @ 12% Present Worth	Total Cost
Alt. 1	$ 10,030	$ 88,784	$ 98,814

Assumptions for this alternative are shown in the detailed cost breakdown provided in Appendix C.

EPA Response - The cost estimates appear reasonable.

Compliance with ARARs*

For Alternative 1, identified ARARs are the following:

Contaminant-Specific ARARs

Surface water (East Doane Lake): Oregon Water Quality Standards (50 ug/l lead)
Soils/Battery Casings: EP Toxicity for metals (5 mg/l lead)
Air: OSHA PELs (during remediation): 50 ug/m3
NAAQS for lead (post-remediation): 1.5 ug/m3

Location-Specific ARARs

Within an area that affects a stream or river, an action must protect fish and wildlife in accordance with the Fish and Wildlife Coordination Act (16 U.S.C. 661 et seq.) 40 CFR 6.302.

Action-Specific ARARs

No action-specific ARARs have been identified as applicable to this alternative.

The NAAQS for lead would be routinely met under the No-Action Alternative. No other contaminant-specific ARARs would be met.

*ARARs is an acronym for Applicable, Relevant and Appropriate State and Federal Regulations.

Appropriateness of Waiver

Under SARA, EPA is authorized to allow a waiver from meeting ARARs if any of six conditions apply. For Alternative 1, the applicable waiver requirement is that the remedial alternative attain a standard of performance, through another method or approach, that is equivalent to meeting the ARAR. Under Alternative 1, even with the proposed use of institutional controls, the Endangerment Assessment shows that adequate protection of human health and the environment would not be achieved.

There is no plan for groundwater treatment at the site in Alternative 1. Groundwater treatment at the site will not be necessary with the use of institutional controls.

The application of institutional controls to the site is described in Section 4.1 and evaluated in Section 6.3, where it is rated as high. But because of the ineffectiveness of such controls under this alternative, the ability of Alternative 1 to comply with ARARs or satisfy the requirement for a waiver is judged to be low.

EPA Response - Institutional controls under this alternative are of questionable effectiveness since all the contaminants remain available for exposure. EPA concurs with the overall rating

Overall Protection of Human Health and the Environment

Potential human exposure pathways of concern for the No-Action Alternative are inhalation of contaminated particulates resuspended from surface materials (primarily windblown dusts) and direct ingestion of the contaminated surface materials. Sources include battery casing piles and surface soils, but not subsurface materials, barring significant disturbance of the site. Sediments and surface water in Doane Lake and shallow ground water at the site also have elevated contaminant concentrations. However, there are no completed exposure pathways from ground water and Doane Lake sediments to people, and therefore no human health risks requiring protection. Possible swimming exposures in East Doane Lake and ingestion of fish and shellfish from the Willamette River near the site were screened using available information and determined not to pose significant human health risks.

Long term exposure scenarios evaluated for human health risks include future on-site residential, on-site worker, and off-site (adjacent) residential populations. Such populations do not currently exist on or near the site but are assumed, absent effect institutional controls, for the purpose of evaluating potential human health risks via the inhalation and direct ingestion exposure pathways.

The ambient air lead concentration ARAR is 1.5 ug/m3 (quarterly). That value is calculated to be exceeded on-site, but not off-site, by wind resuspension of surface materials alone. Future on-site activities, if not effectively precluded by institutional controls, could disturb on-site contaminated materials and produce higher air lead concentrations, both on-site and off-site. Other than a requirement to meet EP Toxicity, there is no ARAR for soil lead concentrations (but see Appendix A, Section 7.6).

The magnitudes of risks from inhalation and ingestion exposures to lead are reflected in hazard indices based on acceptable intake-chronic (AIC) values. AIC values for inhalation and ingestion exposures are derived from the NAAQS ARAR value (1.5 ug/m3) and from the drinking water MCL value (0.05 mg/l), respectively. Hazard indices discussed here and in subsequent sections on overall protectiveness of each remedial alternative include values, where appropriate, based on EPA's AIC values (denoted adult) and more appropriate, age-adjusted AIC values (denoted age-adjusted), as discussed in the Endangerment Assessment (see Appendix A, especially Section 6.3.1).

Any direct contact with concentrated contaminant sources on site, such as the battery casing piles, could result in excessive lead exposures. Base case evaluations resulted in hazard indices for on-site residents that exceed 1.00 for both inhalation and ingestion exposures and for all age groups (even with age-adjusted AIC values). Maximum hazard indices are 11.2 (AIC, adult) and 1.44 (AIC, age-adjusted) for inhalation exposures (0 to 9 months old infants), and 34.2 (AIC, adult), and 5.67 (AIC, age-adjusted) for ingestion exposures (9 to 18 month old children). These results demonstrate a significant potential for excessive lead exposures on-site under the No-Action Alternative.

Off-site inhalation exposures have a maximum hazard index of 1.71 (AIC, adult), but only 0.22 (AIC, age-adjusted) for 0 to 9-month old infants. The more appropriate age-adjusted value is consistent with the calculated air lead concentration off site being well below the NAAQS ARAR value. These results demonstrate non-significant off-site inhalation exposures to lead, in the absence of significant disturbance of on-site contaminated materials.

Overall, the human health risk evaluations for the No-Action Alternative show that either on-site residential exposures and disturbance of on-site materials should be precluded or on-site surficial lead concentrations must be reduced. The rating for the No-Action Alternative is low.

EPA Response - Concur with overall rating. The text states that there is no on-site worker population. However, workers are on the Rhone Poulenc property immediately adjacent to the site where buried battery casings and contaminated soil are located. The text states that there is no ARAR for lead in soil. In this case the endangerment assessment is used instead of an ARAR to determine the allowable exposure level. The text states that off-site exposures to lead in air are insignificant; however, the EA shows exposure at a level below the AIC. This does not mean the exposure is insignificant.

ALTERNATIVE 2C EVALUATION

Alternative 2C comprises removal of the surface piles of battery casing fragments, followed by component separation and recycling of some components, off-site disposal of others; lime treatment of the exposed surface soils and battery casing material, followed by low permeability capping and revegetation; lime treatment of the East Doane Lake surface water; site grading; and a long-term monitoring program. This alternative differs from Alternatives 2A and 2B primarily in the way that the surface piles of battery casing fragments are disposed of, in the treatment of surface soils and battery casings, and in treatment of East Doane Lake. Rather than disposal in an off-site landfill, this alternative calls for processing of the battery casing fragments in the surface piles and subsequent recycling of some of the constituents. The alternative also employs treatment of surface soils and battery casings remaining on the site by covering those materials with a layer of lime under a low permeability cap. In addition, Alternative 2C calls for lime treatment of the surface water in the East Doane Lake remnant.

Short-Term Effectiveness

Under this alternative, as under Alternatives 2A and 2B, most of the fill material would be left in place, thereby reducing the potential for off-site exposure to site contaminants due to fill excavation and handling. During remediation, worker safety issues similar to those for minor earthmoving projects will arise. Hazards associated with site contaminants will be controlled by appropriate respiratory protection, proper safety attire and the application of dust suppression techniques. Therefore, the short-term risks for workers on-site would be negligible. The Endangerment Assessment clearly shows that the hazard index for inhalation of lead by off-site workers at the fenceline is well within the acceptable chronic intake level. Fencing and other controls would be used to prevent the public from entering the site during remediation.

The surface piles carry the greatest potential for environmental risk because of their availability. Battery casing components contained in the surface piles, which contain the largest of potentially recyclable material, will be transported to an off-site recycler for separation of components. After separation, some components will be recycled, while others may have to be disposed of in a landfill. Risks associated with transport of hazardous wastes from the site to the recycler, and hazardous waste from the recycler to a RCRA landfill will be mitigated by transporting the wastes in accordance with 40 CFR 263 requirements for hazardous waste transportation.

Alternative 2C could be executed in approximately one year, including planning, review, contracting, and completion. The actual timing will depend somewhat on the capacity of the off-site recycler. There are no site conditions or known zoning requirements which might delay execution. Beneficial effects of removing the surface piles, the most environmentally available portion of the site contaminants, will be immediate. Beneficial effects of treating surface water with lime will also be immediate. Beneficial effects of treating the site surface with lime will accrue gradually, and will depend on the time needed for the lime to leach into the fill from the treated surface layers.

The monitoring program for Alternative 2C will be similar to that discussed under the No-Action Alternative in Section 4.2.1. Implementation of the monitoring program will not raise any identifiable serious safety issues.

The time to completion is similar to that for Alternatives 2A and 2B; therefore, the short-term effectiveness of this alternative is considered to be the same as for those alternatives. This alternative is rated high for short-term effectiveness.

EPA Response - This alternative is not effective because of two main concerns. First, significant quantities of hazardous materials remain at the site and there is potential exposure to these substances if the controls proposed by the company are not effective. Second, the lime treatment proposed by the company has not been fully evaluated during the FS and therefore its effectiveness at this site is not well known.

Long-Term Effectiveness

The intent of this alternative is to mitigate health and environmental effects of site contaminants due to airborne pollution or exposure to contaminated surface water; to reduce the off-site migration of contaminants in the air and in surface water; and to reduce to an acceptable level the potential for adverse human health effects from remaining site contaminants. Removal of the surface piles is expected to substantially reduce the potential for entrainment of dust from the site by wind, and to reduce the potential for human contact with site contaminants. Pumping and lime treatment of the site surface water will reduce the concentrations of dissolved contaminants by raising the pH of the water. Site grading will reduce the amount of runoff in the lake remnant, and eliminate the transport of surface water off-site. The application of lime to the surface areas where soil is exposed or where casings are exposed or buried should reduce the concentration of dissolved contaminants in surface runoff by raising the local pH. Subsequent capping will isolate the remaining contaminants from the environment, thereby reducing their availability for off-site transport by surface water and direct contaminant ingestion with soils.

Under this alternative, health and environmental hazards posed by the site fill are mitigated. Treatment undertaken by this alternative addresses all of the site contaminants that are environmentally available. As shown by the results of the Endangerment Assessment, these treatments adequately address site concerns by reducing risks to acceptable levels. After remediation is complete, contaminated sediments, subsurface casings, and fill remain. However, no significant risks are posed by these media. Lead in sediments will remain insoluble (and therefore unavailable) because of a raised lake pH; lead in subsurface casings buried up to 30 feet beneath the surface will also remain unavailable because of a gradually, steadily rising subsurface pH; lead in ground water also has a limited solubility (less than 0.05 mg/l) at the present pH. These risks are adequately addressed by institutional controls, rather than by treatment.

Equipment needed for treating the surface waters at the site is practical and reliable. The average lead concentration of East Doane Lake is 0.049 mg/l; however, dissolved lead concentrations as high as 0.28 mg/l were measured during the RI. The degree of dissolved lead removal achievable by lime treatment will be determined by bench-scale testing during remedial design. At a minimum, water treatment by pH adjustment followed by filtration will be effective at reducing some of the dissolved lead, and the majority of the non dissolved portion of the lake's lead burden. Following water treatment for lead reduction, the water of East Doane Lake will be periodically monitored to determine the need for repetition of the treatment.

Lime treatment of the exposed soil and fill will be used to neutralize any remaining unreacted acid within the area of high sulfate in the soil. As such, soil pH will rise more rapidly than without the addition of lime. Once soil pH is raised, it should stay raised because site operations have been discontinued. Testing will be conducted to ascertain that soil pH is within the required range; lime addition may need to be repeated to achieve the desired results. Surface capping is a proven technology and is considered reliable in preventing human contact with contamination. Monitoring of the cap will be employed to ascertain that the cap maintains minimal functional performance requirements. Site monitoring equipment will require continued maintenance.

Implementation of this alternative is dependent on the availability of an off-site recycler. During the conduct of the FS, pilot-scale studies were performed at two off-site recyclers, either of which may be candidates for receipt of this material. Others may be available. Existing recyclers are generally capable of handling whole batteries, but will likely be able to handle the surface piles because surface piles are similar to whole batteries in terms of material content. However, even this relatively small amount will likely require several months to separate at a typical recycle facility because of capacity limitations. Therefore, it is expected that a suitable separation facility and subsequent recycle and disposal locations can be found for the relatively small volume of material in the surface piles.

Considering all factors, this alternative is rated high for long-term effectiveness.

EPA Response - Since only about 1% of the casings are treated, and since the treatment of soils has not been adequately evaluated at this site, the long term effectiveness of this alternative is questionable. The RI has indicated that lead is migrating off-site, but at a slow rate. The risks from the remaining contaminated materials at the site have been shown by the No-Action Alternative to be significant. Unless these materials are adequately treated it is improper to say that future risks are insignificant. There has not been enough work done to support the statement that lead in subsurface casings will remain unavailable. Once the pH is raised, it is unknown what factors in the soil might affect the stability of that pH and what additional work might be [illegible] pH. The text states that surface capping is a proven technology; however, there are still uncertainties involved should the present use of the property change and the cap later be disturbed.

Reduction in Toxicity, Mobility, or Volume

Alternative 2C reduces the volume and toxicity of the site contaminants contained in surface piles, which is the most significant potential source of exposure, and East Doane Lake. In addition, the mobility of contaminants in soil and subsurface casings and into air is reduced by increasing the pH of the soil system through lime treatment and by surface capping. Periodic reapplication of lime as required will provide a permanent reduction in contaminant mobility. Subsurface contaminants are not reduced in volume or toxicity, however. Materials being disposed of off-site in this alternative consist of the ebonite in the surface piles of battery casings (about 800 tons) and any non-recyclable portion of the lead oxide and plastic. In all, the material being disposed of off site will total less than 1 percent of all site contaminants. This alternative is rated moderate to high for reducing contaminant toxicity, mobility, or volume.

EPA Response - The reduction of toxicity, mobility, or volume of the waste must be rated low since it does not address toxicity or volume and only partially addresses mobility.

Implementability

Equipment for separating the battery casing fill at the site is available; however, as discussed in Section 5 of the FS, attempts by NL, Gould, and other entrepreneurs to separate battery casing fill from the Gould site and from other similar sites have not demonstrated the practicability of recycling all component streams. An element of practicability certainly focuses on the material that equipment is designed to process. The separation equipment tested during the FS was designed to work on whole batteries, not on the mix of materials found at the Gould site. In particular, plastic and ebonite streams analyzed after processing through available separation equipment contained sufficient residual lead to fail the TCLP test. Further, lead oxide is combined with much dirt in the separation process, which will serve to reduce the recyclability of this fraction.

Except for the battery component separation process, Alternative 2C would be accomplished using conventional machinery and practicable, proven techniques. Surface capping is a proven technology, and is considered reliable. Regular inspection of the cap will be required to ascertain that the cap maintains minimal functional performance. Because of some concern about the practicability of separation equipment, the technical feasibility of Alternative 2C is judged to be moderate to high.

Alternative 2C involves the removal and treatment of the surface piles of battery casings, surface soil treatment with lime, and surface water treatment by pH adjustment and filtration. Recovered battery casing components will be sent to other facilities for recycling or disposal. Those facilities receiving battery casing components will be required to meet RCRA TSD requirements for processing of hazardous wastes, as required by the EPA Off-Site Policy. Applicable DOT and EPA regulations for the transport of hazardous materials will also have to be followed.

During remediation, a treatment facility will be erected, operated, and demolished, surface treatment equipment will be operated, and air monitors will be relocated. Any off-site portion of these activities (i.e., off-site drainage) will require permits. It is assumed that the on-site portion of these activities will not require permits. The administrative feasibility of Alternative 2C is judged to be high.

EPA has confirmed RCRA regulations regarding the recycling of plastic, metallic lead, and ebonite from the site (see Appendix F). If a recycler is available and willing to accept these materials, EPA will allow recycling of these materials from the site without designating them as hazardous waste. Lead compounds, however, will be required to be transported and handled as a hazardous waste. Thus, any facility interested in accepting the lead compounds for the purposes of recovering the lead would have to be permitted as a TSD facility under 40 CFR Part 264.

Recovered battery casing materials which cannot be recycled will be disposed of in a landfill. Assuming that landfilled materials fail the test of EP Toxicity for lead, the landfill will have to meet the requirements of 40 [illegible] [illegible] Alternative 2C is judged to be high.

Overall, the implementability of Alternative 2C is judged to be high.

EPA Response. The FS studies have shown that these materials can be separated, particularly when this alternative focuses only on the surface piles. In general, EPA concurs with this assessment.

Cost

The costs associated with this alternative are divided into two categories. The first is capital cost which includes direct costs such as transportation, separation, and disposal costs associated with the surface casings; surface water treatment costs; lime addition to soil; site grading; and installation costs associated with monitoring. Also included in capital cost are indirect costs such as permitting, engineering and design, start-up, and contingency. The second category of cost is operating and maintenance costs including site monitoring and reporting. Operating costs are discounted to present worth for comparison of alternatives. Detailed cost breakdown information is provided in Appendix C.

	Capital Cost	O&M @ 12% Present Worth	Total Cost
Alternative 2C	$3,133,760	$1,789,722	$4,923,481

Assumptions for this alternative are shown in the detailed cost breakdown provided in Appendix C.

EPA Response - These cost estimates appear to be reasonable.

Compliance with ARARs

Contaminant-specific ARARs that apply to the Gould site are contained in Table 3.2-1. In addition, some location-specific ARARs and action-specific ARARs would apply to the remediation. For Alternative 2C, identified ARARs are the following:

Contaminant-Specific ARARs

Surface water (East Doane Lake):	Oregon Water Quality Standards
Soils/Battery Casings:	EP Toxicity for metals
Air:	OSHA PELs (during remediation): 50 ug/m3
	NAAQS for lead (post-remediation): 1.5 ug/m3

Location-Specific ARARs

Within an area that affects a stream or river, an action must protect fish and wildlife in accordance with the Fish and Wildlife Coordination Act (16 U.S.C. 661 et seq.) 40 CFR 6.302.

Action-Specific ARARs

Capping and closure standards under 40 CFR 264 would apply to Alternative 2C if RCRA waste units were being built, i.e., if waste was being removed and replaced. However, such actions are not included in Alternative 2C. Therefore, no action-specific ARARs have been identified as applicable to this alternative.

All contaminant-specific and location-specific ARARs will be met by Alternative 2C, except for the EP Toxicity requirement for lead in soils and battery casing materials.

Appropriateness of Waiver

Under SARA, EPA is authorized to allow a waiver from meeting ARARs if any of six conditions apply. For Alternative 2C, the applicable waiver requirement is that the remedial alternative attain a standard of performance, through another method or approach, that is equivalent to meeting the ARAR. Under Alternative 2C, the proposed use of institutional controls would allow the attainment of a standard of performance equivalent to meeting the ARAR for EP Toxicity in soil. There is no plan for groundwater treatment at the site in Alternative 2C. Groundwater treatment at the site is not necessary with the use of institutional controls. Groundwater treatment as a technical alternative is addressed by Alternative GW, which proposes a method for attaining a groundwater clean-up level of 0.05 mg/l dissolved lead.

The application of institutional controls to the site is described in Section 4. and evaluated in Section 6.3, where it is rated as high. Because of the effective employment of institutional controls under Alternative 2C, the ability of Alternative 2C to comply with ARARs or satisfy the requirement for a waiver is judged to be high.

EPA Response - Since ... t of the contaminated material remains on-site and is untreated, and since the ... effectiveness of the additional controls proposed is questionable, it will be difficult to make a case for waiving the state and local regulations on the basis that the proposed alternative is equally protective.

Overall Protection of Human Health and the Environment

Surface contamination on site is reduced under Alternative 2C by removal of the above-ground battery casings piles and by paving/capping areas of highest residual s... contamination, with lime applied before paving/capping to further reduce the potential mobility of residual lead in subsurface soils. These measures will provide long-term, effective controls for general inhalation exposures and direct contact ingestion exposures in these areas of the site, barring physical disturbance of the pavement/cap. East Doane Lake surface waters will also be treated under Alternative 2C.

6.12 ALTERNATIVE 10C EVALUATION

Alternative 10C comprises excavation of all of the battery casing fragments and matte from the Gould property and adjacent properties where casings have been identified, followed by on-site separation of the battery casing fragments. Separation is followed by recycling of those components (or portions of components) that can be recycled, and off-site disposal for non-recyclable components that fail the EP Toxicity test, and on-site disposal if non-hazardous. Additional processes under Alternative 10C include excavation, fixation/stabilization and on-site disposal of contaminated soil, sediment, and matter revegetation; isolation of East Doane Lake by site regrading; and a monitoring program to verify that no contaminants remaining on-site are mobile. This alternative differs from Alternatives 10A and 10B in the way non-recyclable materials are handled. No incineration is proposed, and a decision on the need for treatment of East Doane Lake is postponed, pending further study of the ground-water system.

Evaluation criteria under this alternative are all influenced heavily by the summary conclusion that the alternative is technically not feasible due to the magnitude of problems associated with separation and cleaning of subsurface casings to render them recyclable or non-hazardous.

EPA Response - The treatability studies indicate that the materials can be physically separated, so the alternative is feasible. The lead levels in the output streams are a concern based on the treatability studies. However, it is believed that a rigorous design phase can overcome most of these problems. The alternative also calls for disposal at a hazardous waste landfill of any materials that fail EP Tox, which is clearly feasible.

Short-Term Effectiveness

During remediation, worker safety issues similar to those for moderate moving projects will arise.. For on-site workers, safety attire will mitigate some safety concerns; however, several activities will be conducted simultaneously in a relatively small area, leading to some concern over worker safety due to the intensive nature of site activity. Therefore, the short-term safety risks for workers on site could be significant.

The results of the Endangerment Assessment modeling show that during remediation, lead concentrations in air emissions at the fenceline of the property will far exceed the NAAQS for lead. Hazard values indicated in the EA are up to 10.404 ug/m3 during remediation. Even with the most aggressive emission control and dust suppression program, the extensive on-site activity over a protracted period of time will lead to emissions above acceptable levels. This will result in violations of the lead NAAQS, which has been promulgated under the Clean Air Act by EPA to protect public health. Because of these emissions, it is likely that off-site workers in adjacent industrial areas may be required to wear respirators during remediation. Such a requirement is seen as being very controversial and difficult to enforce. Additionally, lead-bearing dust will contaminate the surrounding properties, soil, buildings, and roads.

The long-term exposures and risks after completion of Alternative 2C remediation activities are determined to be acceptable. On-site residential exposures by inhalation and ingestion result in hazard indices less than 1.00 for all age groups, even using adult AIC values. Maximum on-site residential hazard indices (age-adjusted) are 0.03 for inhalation and 0.12 for ingestion. On-site worker and off-site residential populations have even lower hazard indices for all exposure pathways evaluated. On-site and off-site air lead concentrations are in compliance with the NAAQS ARAR value.

Under extreme exposure assumptions, the maximum residual surficial soil lead concentrations pose a small risk in a small area of excessive lead exposures, primarily for young children. The assumptions under this scenario, however, are precluded under the alternative and thus do not affect the analysis.

Short-term, off-site worker inhalation exposures from fugitive dusts generated during Alternative 2C remedial activities are determined to be non-significant, with a hazard index of 0.19. Maximum short-term (quarterly) air lead concentrations off site are projected to be in compliance with the NAAQS ARAR value, although shorter duration concentrations could exceed 1.5 ug/m3.

The overall protectiveness offered by Alternative 2C is clearly adequate. Its protectiveness rating is high.

EPA Response - The text states that the cap will be effective as long as it is not disturbed, but it is not known what the likelihood of future disturbance is. The maximum exposure levels that are estimated are based on assumptions about the effectiveness of the cap; these might be higher if there are disturbances in the cap. Finally, the overall protectiveness of this alternative cannot be considered high since it does not provide for treatment of all the contaminated battery casings and soils.

The completion of remedial activities under Alternative 10C would take slightly more than 6 years after remedial design is complete, as follows:

Remedial design, specification, procurement, testing, and contracting	12 months
Facility construction	9 months
Excavation and processing of battery casings, soils, sediments	56 months
Demolition, salvaging, and site renovation	9 months
Total Time	86 months

Site conditions that may delay execution of the alternative include, as with 8A, 8B, 10A, and 10B, logistical difficulties associated with dredging of the lake sediments. Dredging during periods of high rainfall may be precluded by a requirement to avoid discharges of lake water laden with sediment. Requirements related to stabilization of the lake shoreline during deployment of dredging equipment may also serve to extend the time required for dredging. But the most significant constraint on the implementability of Alternative 10C is that source separation technology is unproven, and therefore impractical and unreliable. Through several studies, it has been determined that surface piles of casings can in all likelihood be feasibly separated by the use of existing systems. However, the subsurface casings, with the large amount of dirt and mud they contain, cannot predictably, reliably, or practicably be separated. Moreover, equipment designed for this particular application (i.e., casings and mud) is not available nor has a prototype been tested. The pilot tests during this FS have been conducted on equipment designed to break batteries and separate the various battery components. That application is far removed from the task presented by this alternative. Reports from operators of existing battery breaking equipment indicate that the equipment requires inordinate operator attention and maintenance. Equipment for this application has yet to be designed and tested.

Beneficial effects of removing and successfully separating battery casings, assuming it could be done, and fixing/stabilizing soils, sediments, and matte will be immediate on completion. However, dredging of the lake sediments will severely affect the water quality of the lake. Because no lake water treatment is proposed pending further study, the water quality will remain degraded for an indefinite period.

The monitoring program for Alternative 10C will be conducted as long as site contaminants remain unremediated. Implementation of the monitoring program will not raise any serious safety issues.

It is possible that the casings may be excavated and not separable, which would cause exceedances of NAAQS and require disposal of the whole mass. Because of this, the time to completion is so long, the degree of uncertainty surrounding subsurface battery casing separation is so high, the emissions associated with remediation exceed limits, and because community objections to short-term emissions are expected, the short-term effectiveness of this alternative is considered to be low.

EPA Response - The estimated lead emissions during remediation here are based on crude emission estimates that do not reflect the degree to which fugitive dust can be controlled during materials handling operations. There is a risk that fugitive dust emissions will occur during the remediation, but strict procedures will be used to keep them at a minimum. It should also be noted that buried battery casings are in groundwater. EPA considers the estimate for time to complete the remediation to be conservative. The estimate is based on a variety of factors that include the size of the facility and other items that will be evaluated during the design phase. It is the agency's intent to minimize the time that is required for remediation under this alternative. The text states that equipment for this application has yet to be designed and tested. The units that were evaluated during the treatability studies can be considered pilot scale versions of units that will be constructed at this site once design work is complete. Materials handling will be a major concern in the design of this unit. The text mentions dredging of the lake sediment affecting water quality. EPA believes that technologies are available for dredging the sediments while minimizing the impacts on water quality in the lake.

Long-term Effectiveness

The intent of this alternative is to mitigate health and environmental effects of site contaminants due to airborne pollution, exposure to contaminated surface water, or exposure to primary source material in soils, and to reduce the off-site migration of contaminants in the air or in surface water or ground water. Removal and successful separation of the battery casing fragments would substantially reduce sources of pollution at the site. Without the battery casings, levels of pollution in all media will decrease. Removal and disposal of contaminated sediments without treatment of the site surface water will raise the concentration of dissolved and suspended contaminants. Site capping will isolate the remaining contaminants from the environment, thereby reducing their availability for off-site transport by surface water and direct contaminant ingestion with soils.

Under this alternative, health and environmental hazards posed by the site are intensively addressed by treatment. Potential hazards posed by the site fill are addressed by the removal of the battery casing fragments. Although treatment undertaken by this alternative addresses essentially all of the contaminated material and related risks, the technology on which the alternative is based is unproven. Risks remaining after remediation is completed are posed solely by stabilized soil and groundwater in the study area. These risks are addressed by institutional controls, rather than by treatment.

The removal of the battery casing fragments ~~for separation and~~ recycling, disposal, or destruction will reduce the hazards associated with source material at the site. However, the processes available for separating and cleaning the battery casing fragments have not been shown to be practicable, resulting in subsequent landfilling of the wastes. Surface capping is a proven technology and is considered reliable. Regular inspection of the cap will be required to ascertain that the cap maintains minimal functional performance. Site monitoring equipment will require continued maintenance.

Because of the significant landfill component and hazardous waste transport factors associated with Alternative 10C, and because it cannot be assumed that the remedial processes are technically feasible, nor that they will be successful, the performance of this alternative is judged to be low. Therefore, this alternative is rated low for long-term effectiveness.

EPA Response - The technology to be used in this alternative has been demonstrated in other situations and appears to be feasible based on the studies that have been done at this site, since the tests clearly showed that the materials can be separated. This alternative provides for treatment to either recycle or immobilize all of the battery casings and the contaminated soils, sediment, and matte at the site. Material that can not be recycled will be landfilled at an appropriate facility. EPA therefore considers the long term protectiveness of this alternative to be high. The remaining risks, in particular groundwater quality, will be evaluated during the additional study.

6.12.3 Reduction in Toxicity, Mobility, or Volume

In Section 1 of the FS, the estimated quantities of metallic lead, plastic, lead oxide, ebonite, and other material are calculated. In the Section 6.2 discussion on recycle potential, an estimate of the quantity of metallic lead is shown as 0.6 percent of all primary source materials, plastic is estimated at 3.0 percent of primary source materials, lead oxide/dirt/mud at 10.2 percent, and ebonite at 74.3 percent. Contacts made during the FS indicate that the metallic lead would likely be completely recyclable, the plastic would be recyclable at some locations, depending on lead content, and lead oxide would likely be accepted by some smelters, although a lead content less than about 40 percent may be rejected. By far the largest component of source material, ebonite, is non-recyclable because of lead content. In Section 6.2, an estimate is made that about 2.7 percent of all primary source materials are potentially recyclable. This reduction is more than offset by the increase in volume of excavated soils, stabilized soils and sediments, and of solidified lead oxide prior to off-site RCRA disposal. Volume reduction, then, is not achieved by this alternative. Instead, an actual waste volume increase estimated at 10 percent will result.

The potential for long-term mobility of site contaminants is decreased with Alternative 10C, but at the expense of a significant and detrimental increase in short-term mobility during remediation. The toxicity of contaminants is unchanged by this alternative. Lead is merely moved from one spot to several others.

Recycling offers the benefit of obtaining a product from the waste which may have a higher economic value than the waste itself, and contributes towards achieving the remedial objectives listed in Section 2. But the result of recycling at the Gould site is minimal under this alternative, which represents the maximum recycling effort possible.

Thus, Alternative 10C does not significantly reduce the toxicity or mobility of the site contaminants, and it actually results in an overall volume increase. Further, the technical unfeasibility of the alternative reduces the probability that the objectives can be achieved at all. This alternative is rated low for reducing contaminant toxicity, mobility, or volume.

EPA Response - The text should focus on the reduction in volume of lead that can be recycled, not the total volume of the battery casings, since it is lead that is of concern. The text states that the lead can be recycled and that the lead oxide is likely to be recyclable. These two streams constitute the majority of the lead that is in the casings. With proper attention to design, EPA believes that the ebonite stream can also be cleaned to the point where it can be recycled. In addition, treatment of the contaminated soils, sediment, and matte should reduce the mobility of lead in them. Therefore, EPA rates 10C high on this criteria, particularly compared to the other alternatives evaluated.

Implementability

During the conduct of the FS, several efforts at component separation and cleaning of the battery casing material have been attempted. A review of the efforts of others who attempted separation and recycle was also conducted. These attempts, which are discussed in detail in Section 5, can be generally characterized as demonstrating that separation of surface piles of battery casings is feasible at low feed rates, and separation of buried battery casings is not feasible. The key difference between the two fractions is the large dirt, mud, and miscellaneous debris content of the subsurface casings.

The separation equipment tested during the FS, and earlier by AlChem and others, is designed for the breaking and separation of whole batteries into component parts. The surface piles have a relatively low dirt content, which makes them roughly analogous to whole batteries in terms of the properties that are important to the separation process. Thus, physical separation of the surface pile material should be possible. The buried casings, on the other hand, are comingled with large quantities of dirt, mud, rocks, concrete, and other debris, and contain a low percentage of recyclable material. Because of this comingling, the buried casings bear little resemblance to whole batteries as a feedstock for separation equipment. As a result, significant modifications must be made to the processing of this material. Furthermore, the required modifications are not today wholly known. For instance, labor will be required up front to hand-pick rock, slag, concrete, wood, and other debris out of the feed stream to the separators. It is also known that a solution to foaming problems must be incorporated into the design, and that an increase in the dirt/mud content of the feedstock will, with any set of modifications envisioned, result in a decrease in the efficiency of the physical separation and in the recyclability of the lead compounds. At this time, no manufacturer has designed equipment to do what must be done; i.e., to reliably separate the subsurface battery casing fill at the site into separate components that could potentially be recycled.

Another problem occurs after the separation, regardless of whether the feedstock is surface piles or buried casings. As was pointed out in the evaluation of Alternatives 2C, 8B, 10A, and 10B, plastic and ebonite streams analyzed after processing through available equipment contained enough interstitial lead to fail the TCLP test. Thus, all materials that could not be recycled would need to be landfilled. Therefore, this alternative requires the development of separation equipment, then performing the separation, only to be faced with a requirement that 95 percent of the material be landfilled after enormous expenditure of time and money.

Soil stabilization is a proven technology and was shown to be effective in a bench-scale test during the FS. Transfer of bench-scale data to actual site conditions is always difficult, however. Pilot-testing of the technology under actual site conditions will be required during remedial design to determine the correct ratios of materials and to determine whether the technique can be effective under actual site conditions. Unknown, for example, is whether the stabilized soils can be replaced under the groundwater surface, and what the maximum water content of materials to be stabilized might be.

As was discussed in the evaluation of Alternatives 8A, 8B, 10A, and 10B, sediment dredging is not a simple process. At the Gould site it will involve logistics that cannot be determined until actual field trials are attempted. In addition, sediment dredging will cause severe degradation of East Doane Lake surface water. Its inclusion serves to reduce the alternative's technical feasibility.

Except for the battery component separation process, which has not been demonstrated, Alternative 10C would be accomplished using conventional machinery and techniques. Because of the difficulties listed above, the technical feasibility of Alternative 10C is judged to be low.

Alternative 10C involves the excavation and separation of all battery casings, followed by recycling or RCRA disposal of specific battery casing constituents; the removal, treatment, and on-site disposal of East Doane Lake sediments; soil stabilization for soils failing EP Toxicity; site regrading; and topsoil/revegetation of the surface. Those recycling facilities receiving the lead oxide and soil component will have to meet RCRA TSD requirements for processing of hazardous wastes, as required by the EPA Off-Site Policy. Applicable DOT and EPA regulations for the transport of hazardous materials will also have to be followed. No permit is assumed to be required for any of the wholly on-site portions of the alternative. During remediation, separation and treatment facilities will be erected, operated, and demolished, and excavation equipment will be operated. These activities may require construction permits.

Community objections to short-term emissions will likely reduce the administrative feasibility of this alternative. The administrative feasibility is judged to be moderate.

As already noted, EPA has interpreted RCRA regulations regarding the recycling of plastic, metallic lead, and ebonite from the site (see Appendix F). While EPA will allow recycling of these three materials from the site without designating them as hazardous waste, lead oxide/ dirt will be required to be transported and handled as a hazardous waste. Thus, any facility interested in accepting the lead oxide/dirt for the purposes of recovering the lead would have to be permitted as a TSD facility under 40 CFR Part 264. This requirement significantly reduces the feasibility of recycling the recovered lead oxide/dirt.

Recovered battery casing materials which cannot be recycled will be disposed of in a landfill. The landfill will have to meet the requirements of 40 CFR Part 264.

Because of considerations concerning the practicability of separation equipment, the availability of services and materials for this alternative is judged to be low. Overall, the implementability of Alternative 10C is judged to be low.

EPA Response - The text implies that the casings contain a low amount of recyclable material because of contamination with dirt. However, the amount of rock/slag on average was only 3.6%. Even assuming that there is substantial dirt mixed with the lead oxide, it still appears that most of this material is recyclable battery casing. The text states that transfer of the soil treatment technology to this site will be difficult. However, EPA believes this level of effort is what is required at any site where treatment is involved and that this type of treatment is feasible at this site based on the soil treatability studies. EPA recognizes that community concerns during remediation are an important consideration. EPA believes that by minimizing fugitive emissions during materials handling we will address those concerns. Recyclers for these materials do appear to be available providing that the output streams meet certain specifications. Since the battery casing separation studies showed that the material is clearly separable, this alternative is considered feasible.

6.12.5 Cost

The costs associated with this alternative are divided into two categories. The first is capital cost, which includes direct costs such as erection of process equipment, excavation, separation, and disposal costs associated with the surface casings; sediment dredging costs, soil stabilization costs; site grading; and installation costs associated with monitoring. Also included in capital cost are indirect costs such as permitting, engineering and design, start-up, and contingency. The second category of cost is operating and maintenance costs that occur throughout the multi-year remedial effort, such as excavation, separation, and disposal costs beyond year one. Operating and maintenance costs are discounted to present worth for comparison of alternatives. Detailed cost breakdown information is provided in Appendix C.

Capital Cost	O&M @ 12% Present Worth	Total Cost
$3,491,603	$17,073,581	$20,565,184

Assumptions for this Alternative are shown in the detailed cost break-down provided in Appendix C.

EPA Response - The costs for this alternative are the most difficult to estimate. The costs presented above appear to be worst case costs assuming little of the material is recyclable.

Compliance with ARARs

Contaminant-specific ARARs that apply to the Gould site are contained in Table 3.2-1. In addition, some location-specific ARARs and action-specific ARARs would apply to the remediation. For Alternative 10C, identified ARARs are as follows:

Contaminant-Specific ARARs

Surface water (East Doane Lake):	Oregon Water Quality Standards
Soils/Battery Casings:	EP Toxicity for metals
Air:	OSHA PELs (on-site workers): 50 ug/m3
	NAAQS for lead: 1.5 ug/m3

Location-Specific ARARs

Within an area that affects a stream or river, an action must protect fish and wildlife in accordance with the Fish and Wildlife Coordination Act (16 U.S.C. 661 et seq.) 40 CFR 6.302.

Action-Specific ARARs

Since no RCRA unit is being constructed under this alternative, no action-specific ARARs have been identified as applicable.

All contaminant-specific and location-specific ARARs will be met Alternative 10C, except for meeting the NAAQS during remediation.

Appropriateness of Waiver

Under Alternative 10C, the proposed use of institutional controls would allow the attainment of a standard of performance equivalent to meeting all ARARs. There is no plan for groundwater treatment at the site in Alternative 10C. Groundwater treatment at the site is obviated by the use of institutional controls. Groundwater treatment as a technical alternative is addressed by Alternative GW, which proposes a method for attaining a groundwater cleanup level of 0.05 mg/l dissolved lead. A waiver from meeting the NAAQS during remediation is probably not appropriate.

EPA Response - The text states that the only instance where an ARAR will not be met is the NAAQS standard during remediation. EPA believes that this concern can be addressed by providing stringent controls on materials handling operations to minimize fugitive dust. It should be noted that the buried battery casings are currently situated directly in groundwater and are much wetter than the material that has been assumed in the FS in terms of estimating fugitive emissions.

Overall Protection of Human Health and the Environment

Surficial contamination on site is reduced under Alternative 10C by on-site treatment of all battery casings (piles and buried), with off-site disposal at a RCRA landfill of materials failing EP Toxicity tests and stabilization/on-site disposal of remaining residual materials (soil, sediment, matte), and pavement/capping of all disposal areas. These measures will provide long-term, effective controls for general inhalation exposures and direct contact ingestion exposures in these areas of the site, barring physical disturbance of the pavement/cap. Stabilization of residual wastes will provide an additional component of protection.

EPA Response - Physical disturbance of the cap is less likely to impact exposure under this alternative since the material that has been capped has been treated to the maximum extent practicable. EPA rates this alternative highest of any in terms of overall protection of health and the environment.

6.13 ALTERNATIVE 21 EVALUATION

Under Alternative 21, as under Alternatives 10A, 10B, and 10C, all of the fill material on the Gould and off-site properties that fails the test of EP Toxicity for lead (assumed to be 3,000 mg/kg total lead) will be excavated for treatment (soil, sediments) or on-site disposal (battery casings). As under Alternative 10A and 10C, contaminated soil, sediment, and matte would be treated by fixation/stabilization treatment, then backfilled into the site excavation. Unlike Alternatives 10A, 10B, and 10C, excavated battery casing materials would be disposed of in an on-site RCRA-approved landfill. The alternative also includes pH adjustment and filtration of the East Doane Lake remnant, site grading, low-permeability surface capping, and a long-term monitoring program.

6.13.1 Short-Term Effectiveness

Under this alternative, the recovered battery casing fill would be stored on an adjacent property while the landfill is constructed. During remediation, worker safety issues similar to those for major earthmoving projects will arise. For on-site workers, hazards associated with site contaminants will be reduced by appropriate respiratory protection, worker safety attire, and the application of dust suppression techniques. Fencing and other controls would be used to prevent the public from entering the site during remediation. However, off-site ambient air lead concentrations during remediation are predicted to periodically exceed the quarterly average standard of 1.5 5g/m3, even with good control measures in place. Workers in adjacent industrial facilities may be required to wear respirators during remediation, a requirement that would be difficult to enforce.

The monitoring program for Alternative 21 will be similar to that discussed under the No-Action Alternative in Section 6.4. The monitoring program will employ existing monitoring wells to look for changes in the groundwater lead levels. Implementation of the monitoring program will not involve any significant safety issues.

Remediation under Alternative 21 might be completed in about four years, including planning, review, contracting, and construction. Beneficial effects of remediation under this alternative will be immediate on completion of construction. Because of the long time required for remediation and the expected significant problems with off-site emissions during site operations, the short-term effectiveness of this alternative is judged to be low to moderate.

EPA Response - In addition to the problems mentioned above, EPA is also concerned about the effectiveness of leaving all of the contaminated battery casings untreated on-site. EPA believes that the concerns about off-site emissions can be handled by following procedures that are designed to minimize fugitive emissions.

Long-Term Effectiveness

The intent of this alternative is to fully mitigate potential health and environmental effects of site contaminants by completely isolating the contaminants from the environment. Enclosure of the battery casing fill in a RCRA-approved landfill will prevent the migration of contaminants in water and air, and will limit their availability for direct ingestion. Fixation/stabilization treatment of soil, sediment, and matte will also prevent contaminant migration and will decrease the mobility of these materials. Site regrading and blocking of the overflow from the East Doane Lake remnant will reduce the accumulation of runoff in the lake remnant, and decrease the movement of contaminated surface water off-site. With appropriate institutional controls, the health and environmental hazards posed by the site fill are mitigated. According to the site Endangerment Assessment, exposures under the Alternative 21 are reduced by 97.9 percent compared to the No-Action Alternative, so that long-term residual exposures and risks for human health are determined to be acceptable.

The removal and on-site disposal of the battery casing fill is considered a reliable means of eliminating contaminant releases from the site. Frequent inspection of the cap will be required to ascertain that an impermeable barrier is maintained between the contaminants and the environment. Site monitoring equipment will require continued maintenance, as well.

Fixation/stabilization of heavy metals in soil has been performed at other sites with some reliability. Field studies will be required, however, to determine the most suitable agent for this particular site, and the correct ratio of reagent to soil.

Overall, the long-term effectiveness of Alternative 21 is judged to be moderate to high.

EPA Response - EPA generally concurs with this assessment; however, there are still concerns because the battery casings are not treated but merely disposed of on-site.

Reduction in Toxicity, Mobility, or Volume

On-site disposal of contaminated material cannot be considered a treatment that permanently or significantly reduces the toxicity or volume of hazardous substances. The mobility is effectively reduced, but only after remediation is complete. During remediation, air emissions are shown to exceed the NAAQS for lead. Fixation/stabilization treatment also reduces contaminant mobility. Both disposal and fixation/stabilization will, in fact, serve to increase the overall volume of waste on-site. Alternative 21 is rated moderate for reduction of toxicity, mobility, or volume.

EPA Response - This alternative attempts to treat less than half of the contaminated material on site. As a result, its rating is low in this category.

Implementability

Soil stabilization is a proven technology and was shown to be effective in a bench-scale test during the FS. Transfer of bench-scale data to actual site conditions is always difficult, however. Pilot testing of the technology under actual site conditions will be required during remedial design to determine the correct ratios of materials and to determine whether the technique can be effective under actual site conditions. Unknown, for example, is whether the stabilized soils can be replaced under the groundwater surface, and what the maximum water content of materials to be stabilized might be.

As was discussed in the evaluation of Alternatives 8A, 8B, 10A, 10B, and 10C, sediment dredging is not a simple process. At the Gould site it will involve logistics that cannot be determined until actual field trials are attempted. In addition, sediment dredging will contribute to the difficulty of subsequent treatment of East Doane Lake surface water. Its inclusion serves to reduce the alternative's technical feasibility. Excavation of the fill on the Gould and off-site properties must also include a consideration of the power lines along the northwest edge of the Gould property, which may need to be relocated because of remediation. Power supply to industrial facilities may be interrupted as a result.

Alternative 21 would be accomplished using conventional machinery and techniques. Surface capping is a proven technology, and is considered reliable. However, failure of a surface cap could require additional remediation, consisting of replacement of the cap.

Because of the difficulties listed above, the technical feasibility of Alternative 21 is judged to be low to moderate.

Alternative 21 involves the excavation of battery casings for disposal in an on-site landfill, and excavation of soil, sediment, and matte for fixation/stabilization treatment and direct landfilling on-site. The landfill will have to meet the requirements of RCRA, and be constructed to 40 CFR Part 264 standards. As specified by 40 CFR Part 264 Subpart G, institutional controls would apply to the site relating to post-closure care and notifications for a RCRA facility closed with waste in place. The institutional controls include requirements for benchmarks to indicate the location of the waste, land use restrictions prohibiting the disturbance of the cap, restrictions on public access to the property, and notices on deeds or other instruments normally examined during a title search. These restrictions would contribute to the protection of human health and the environment.

During construction, monitoring systems will be installed, site drainage systems will be emplaced, and buildings will be demolished. Construction permits will be required for any off-site portion (i.e., drainage) of these activities.

During construction of the landfill, excavated wastes would have to be placed on an adjacent property. Temporary storage of excavated material must comply with 40 CFR 265.253 and 265.254. Off-site storage might also require special arrangements with state and local agencies and authorities, and special agreements with neighboring property holders. Discussions with off-site industrial facility operators will also be required in order to address the issue of off-site lead emissions during remediation. Undoubtedly, such an issue will be very controversial. This alternative is therefore rated low to moderate for administrative feasibility.

The materials and equipment needed to implement Alternative 21 include a dredge for the sediments, common excavation equipment, a plastic geomembrane for the landfill, water treatment equipment, monitoring equipment, and a source of lime and other reagents for fixation/stabilization. All of these materials are readily available.

Because of anticipated technical and administrative difficulties, the implementability of Alternative 21 is judged to be low to moderate overall.

EPA Response - Generally agree with this assessment.

6.13.5 Cost

The costs associated with this alternative are divided into two categories. The first is capital cost, which includes direct costs such as excavation and landfill construction costs associated with the surface casings, sediment dredging costs, surface water treatment costs, soil fixation/stabilization costs, site grading, and installation costs associated with monitoring. Also included in capital cost are indirect costs such as permitting, engineering and design, start-up, and contingency. The second category of cost is operating and maintenance costs that occur throughout the multi-year remedial effort, such as excavation, placement, and monitoring costs beyond year one. Operating and maintenance costs are discounted to present worth for comparison of alternatives. Detailed cost breakdown information is provided in Appendix C.

Capital Cost	O&M @ 12% Present Worth	Total Cost
$9,678,453	$5,983,396	$15,661,848

Assumptions for this Alternative are shown in the detailed cost breakdown provided in Appendix C.

EPA Response - These cost estimates appear to be reasonable.

Compliance with ARARs

Contaminant-specific ARARs that apply to the Gould site are contained in Table 3.2-1. In addition, some location-specific ARARs and action-specific ARARs would apply to the remediation. For Alternative 21, identified ARARs are as follows:

Contaminant-Specific ARARs

Surface water (East Doane Lake):	Oregon Water Quality Standards
Soils/Battery Casings:	EP Toxicity for metals.
Air: OSHA PELs (on-site workers):	50 ug/m3
NAAQS for lead:	1.5 ug/m3

Location-Specific ARARs

Within an area that affects a stream or river, an action must protect fish and wildlife in accordance with the Fish and Wildlife Coordination Act (16 U.S.C. 661 et seq.) 40 CFR 6.302.

Action-Specific ARARs

Tumulus: must comply with 40 CFR 264 standards for a hazardous waste landfill.

Capping: must comply with 40 CFR 264 Subpart G standards for a cover over hazardous waste at closure.

Closure with waste in place: must comply with 40 CFR 264 Subpart G standards for closure performance and post-closure care and monitoring.

Excavation: hazardous wastes excavated and replaced on-site must be replaced in a waste management unit that complies with RCRA requirements.

All contaminant-specific and location-specific ARARs will be met by Alternative 21, except for meeting the NAAQS during remediation. Action-specific requirements presumably can be met, with details to be worked out during remedial design. The applicability of some of the action-specific ARARs is primarily intended for situations in which a RCRA facility is being constructed, which applies to this alternative.

EPA Response - The NAAQS ARAR can be met with proper attention to control of fugitive dust during materials handling.

Overall Protection of Human Health and the Environment

Surficial contamination on site is reduced under Alternative 21 by on-site treatment of all battery casings (piles and buried), with on-site incineration of ebonite and stabilization/on-site disposal in a constructed vault of residual contaminated materials (soil, sediment, matte). These measures will provide long-term, effective controls for general inhalation exposures and direct contact ingestion exposures in these areas of the site, barring physical disturbance of the vault. Stabilization of residual wastes will provide an additional component of protection.

The long-term exposures and risks after completion of Alternative 21 remediation activities are determined to be acceptable. On-site residential exposures by inhalation and ingestion result in hazard indices less than 1.00 for all age groups, even using adult AIC values. Maximum on-site residential hazard indices (age-adjusted) are 0.03 for inhalation and 0.12 for ingestion.

EPA Response - The overall protectiveness of this alternative can not be considered high due to concerns about effectiveness of the cap. The EPA estimates are based on an effective cap. Actual exposures may be higher if the cap were to be disturbed.

PUBLIC INFORMATION REPORT February 29, 1988

Proposed Issuance of Permit to
Chem-Security Systems, Inc. Arlington, OR

The Oregon Environmental Quality Commission (EQC), Oregon Department of Environmental Quality (DEQ) and the U.S. Environmental Protection Agency (EPA) are proposing to issue a joint permit to Chem-Security Systems, Inc. Arlington, OR (CSSI), to store, treat, and dispose of hazardous waste.

The Chem-Security facility is located in Gilliam County, approximately 12 road miles from the town of Arlington. The site, on Cedar Springs Road, is remote from any residential, commercial, or industrial development; the nearest neighbor being about 1 mile west of the site. The facility consists of approximately 320 acres; however, only about half will be actively used for waste management. It serves primarily the Pacific Northwest, Alaska, and Hawaii, although hazardous wastes are occasionally received from other western states or foreign countries.

Annual waste receipts were approximately 102,000 tons in 1985 and 151,000 tons in 1986. The facility has operated since 1976 under a state permit and federal interim status standards. Wastes regulated as hazardous under the Resource Conservation and Recovery Act (RCRA) and by Oregon state regulations are received for storage, treatment, or disposal. The facility does not accept explosive, radioactive, or infectious wastes. Wastes that cannot be treated or disposed at the facility, or that can be reused or recycled, may be stored temporarily at the facility and then shipped off-site for treatment, disposal, or beneficial use elsewhere.

PCBs, although managed at the facility, do not fall under the auspices of this permit since the permit is issued under Resource Conservation and Recovery Act (RCRA) rules. PCBs are managed under Toxic Substances Control Act (TSCA) rules and will be the subject of separate actions by the agencies.

The main operating units addressed in the permit are 4 container storage units where drummed wastes are temporarily stored (4,140 drums total), 4 bulk liquid storage tanks where landfill leachate is now stored (25,800 gallons), 3 evaporation impoundments for evaporating water from aqueous wastes (13.4 million gallons), 1 reactive solids hydrolysis impoundment where water-reactive solids are treated (374,000 gallons), and 5 landfills (1,030 acre feet). During the term of the permit, CSSI will construct 2 new container storage units (1,500 drums) and replace 2 evaporation impoundments (9.1 million gallons) with 2 others (8.5 million gallons) with an improved liner system. The existing reactive solids hydrolysis impoundment will also be removed from service and may be replaced by a new tank system (90,000 gallons) with full secondary containment. CSSI may also construct a new tank system (90,000 gallons) for stabilization of liquid wastes which will also have full secondary containment. Finally some of the existing landfill units will undergo final closure and a new landfill unit (420 acre feet) may be constructed.

At present, the DEQ is authorized [by EPA] to implement the base RCRA program under the laws existing before passage of the Hazardous and Solid Waste Amendments of 1984 (HSWA). The EPA retains authority for the HSWA laws and permit requirements.

Because of this dual authority a joint permit is being recommended for issuance. This results in each permit condition being subject to one of three jurisdictional authorities:

- State only authority
- Federal only authority
- Joint state/federal authority

As the DEQ becomes authorized for the various parts of HSWA, the permit will be modified to reflect these changes in jurisdictional authority.

The permit is proposed to be issued for a term of ten years but must be completely reviewed after five years. All aspects of hazardous waste treatment, storage, and disposal activity are addressed, including the receipt of waste, the construction, operation, monitoring, closure, and post-closure care (if applicable) of all waste management units, and corrective action for past practices (if necessary).

The provisions of 40 CFR Part 124 Subpart A and OAR Chapter 340, Division 106 have been followed during the permitting process. This included making the permit application, draft permit, a fact sheet, and all documents relating to the permit available for public comment between August 14, 1987 and October 6, 1987. These documents were placed at the offices of the Department in Portland and at EPA in Seattle, Washington. A copy of the permit application, draft permit, and fact sheet was placed in the Arlington, Oregon public library. The draft permit and fact sheet were also placed in the Multnomah County central library in Portland and the DEQ's office in Pendleton, Oregon. In addition, notification was sent by direct mail to all hazardous waste generators registered in Oregon and to all individuals who have expressed an interest in receiving information on Oregon's hazardous waste program. This is over 1,600 names. Finally, public notice was placed in newspapers in Portland, Seattle, The Dalles, Medford, Salem and Spokane and announced over radio in The Dalles.

The public review process culminated in an October 6, 1987 public hearing in Arlington at which approximately 45 people were present. Six people submitted either oral or written comments. In addition, 10 letters of written comment were received during the comment period.

Several major issues were identified during the public comment period. Many persons wanted the DEQ to establish a Citizens Advisory Committee (CAC) to oversee the operation of the site; wanted CSSI to upgrade Cedar Springs Road which leads to the facility; and wanted the local air quality to be monitored.

The DEQ has reviewed the possibility of establishing a CAC and agrees that it is very important to set up open lines of communication between the agencies, the public, and the permitted facility. However, it is DEQ's recommendation that a CAC may not be the best vehicle to accomplish this.

The DEQ proposes to set up a community information program which will ensure a comprehensive flow of information to the public and provide adequate opportunity for the public to interact, as needed, with the DEQ, as regulator, and the facility. The DEQ's community information program will be set up outside the permit.

The DEQ has also reviewed the possibility of requiring CSSI to upgrade Cedar Springs Road. However, after review with legal counsel, the DEQ has addressed this request to the county, as neither the DEQ or the EPA have the statutory or regulatory authority to require road improvements outside of the facility.

Finally, the DEQ and EPA have considered the issue of monitoring air quality using either modeling or emission technology. For the first approach, the air emissions are measured for use in a dispersion model to estimate the amount or concentration of airborne contaminants at the nearest residences. Then, using acceptable dose information to estimate risk of injury to human health, an allowable level of airborne contaminants is extrapolated back to the emission source. The final step is to specify emission control techniques or devices to achieve these allowable levels. The second approach is to select, regardless of air quality, the best demonstrated available technology to minimize the potential for airborne contamination.

The EPA is attempting to develop air monitoring and emission control standards but this has proven to be a difficult task. To date, neither monitoring methods nor control standards have been developed. In fact, very basic issues such as whether to monitor for all volatile organic compounds as a group or as individual constituents has not been decided. Likewise, the DEQ is also in the process of developing a regulatory program to address the problem of hazardous air contaminants. An interim program for controlling these pollutants is being applied to new sources, and those undergoing major modifications, as part of the existing permit review process. A strategy for expanding this review to include existing sources is being considered. It is anticipated that a set of regulations will be finalized within the next year. After adoption, modifications can be made to the permit to reflect these new rules if necessary. Coupling this information with the fact that CSSI owns a substantial buffer zone around the hazardous waste management area and the nearest resident is over a mile away, led the agencies to conclude that emission technology is the preferred approach.

Conditions have been written into the permit which utilize the best demonstrated available technology to minimize the potential for airborne contamination. For example, the permit contains land disposal restrictions which set strict standards on wastes containing volatile organics that can be placed in surface impoundments and landfills. Additionally, certain types of facility management practices such as dust suppressants and daily cover of waste will be used to minimize the potential for fugitive dust emissions from landfill cells. Prior to storage of volatile organic waste in the bulk liquid storage tanks, a carbon filtration system will be required to minimize the release of volatiles through the tank vent system.

The permit conditions include the following aspects of site management:

- Wastes to be handled (and not handled).
- Waste analysis plan (how and when wastes will be sampled and analyzed).
- Security measures.
- Inspection plan (what is to be inspected, how, frequency).
- Prevention and preparedness (how to prevent accidents).
- Contingency plan (what to do in the event of an accident).
- Training programs for employees.
- Closure and post-closure (monitoring, site security) plans; cost estimates and financial assurance. Post-closure remedial action.
- Liability coverage for sudden and non-sudden accidental occurrences.
- Groundwater monitoring (to ensure immediate detection of contamination).
- Specific design and operating requirements for each waste management unit (impoundments, landfills, etc.)

In addition, there are a few permit conditions and those deleted from the previous permit which are worth noting:

- There is no requirement for a disposal request approval as required by earlier permits. The permit accomplishes this same purpose by specifying at the outset which hazardous wastes CSSI may and may not accept.
- CSSI is providing financial assurance of approximately $6.6 million for closure, $2.2 million for post-closure care, and $0.4 million, to be increased at 7.5% per annum, for post-closure remedial action. In addition, CSSI is providing liability insurance in the amount of $1 million per occurrence/$2 million annual aggregate for sudden accidental occurrences and $3 million/$6 million for non-sudden accidental occurrences (primarily groundwater pollution).
- CSSI will no longer be required to deed to the state the land used for disposal of hazardous waste.

Issuance of the permit is expected to be completed at the March 11, 1988 EQC meeting in Portland.

For further information, call Fred Bromfeld at 229-6210 or Paul Christiansen at 229-5095 (DEQ, Portland).

SM1421

EXECUTIVE SUMMARY

This report presents the results of the remedial investigation for Gould Inc. and NL Industries, Inc. as required by Administrative Order on Consent (Consent Order) EPA Docket No. 1085-05-08106, dated August 29, 1985. The study covers property currently owned by Gould (previously owned by NL Industries) and adjacent properties owned by other property owners. The purpose of the remedial investigation was to:

- Characterize the extent of contamination at the site, a former secondary lead smelter;
- Assess the existing and potential threats to human health and environment; and
- Identify potentially applicable remedial technologies.

The remedial investigation included:

- Collection of historical data available for the site;
- A literature review of urban lead contamination (reported elsewhere);
- A characterization of the existing study area with regard to potential contamination of surface and subsurface soils, lake and river sediments, and surface water and ground water;
- Assessment of lead contamination in waste stockpiles;
- Assessment of airborne lead contamination resulting from site activities;
- Assessment of potential pathways for contaminant migration from the site; and
- Preliminary evaluation of potential remedial actions.

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Site Features Investigation Results

The smelter was originally constructed in 1948 upon a site constructed with fill materials placed in an oxbow lake, Doane Lake, formed by the nearby Willamette River. The plant operated several different processes including lead-acid storage battery breaking and grid metal separation, lead smelting and refining, lead oxide manufacturing, zinc alloying, and electrical cable stripping. The plant operated from 1949 through 1972, at which time the smelter was shut down. Battery-breaking operations and lead oxide manufacturing continued at the plant until 1981. Waste materials from the operations were generally deposited on the plant or adjacent properties. In 1983, a company called Alchem Western was unsuccessful in its attempt to operate equipment to separate plastic from hard rubber casings in the mixture remaining on the Gould property.

The site is located in an industrial area with low population density and few residences in the general vicinity. The site is relatively flat, with very little vegetation or wildlife. Two remnants of Doane Lake were included in the study area. No rare, threatened, or endangered species are known to inhabit the area, although the nearby Willamette and Columbia Rivers provide habitat for substantial waterfowl and fish species. A City of Portland park (Forest Park) is located southwest of the study area. The climate of the area is heavily influenced by Pacific Ocean air masses which bring abundant rainfall. Other features affecting the local climate of the site include the coastal mountain range, the Cascade Mountains, and the Columbia River Gorge which allows continental air masses to move into the area occasionally. Airborne baghouse emissions exceeding federal and state air quality standards have been observed during plant operations in previous years.

Surface Debris Investigation Results

Investigations of smelter wastes used as fill material in the study area identified two types of materials: shredded battery casings and a slag-like material referred to as matte. Casing materials consist of

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polyester plastic, hard rubber (ebonite), lead oxide residues, small amounts of lead and non-lead metal, and other scrap materials such as iron, rock and wood. Composition of the shredded casings varies widely, with total lead concentrations (metallic lead and lead oxide) from 3.1 to 14.5 percent. The casing samples tested failed the Resource Conservation and Recovery Act (RCRA) EP Toxicity leachate analysis for lead.

The matte consists primarily of rock-like chunks composed of metallic sulfides, principally iron, and contains 6 to 11 percent lead. This material is the principal waste resulting from the smelting and refining operations, and it is estimated that about 12,000 tons were produced over the years of smelter operation. Matte also fails the RCRA EP Toxicity leachate analysis for lead.

During the years in which the smelter operated (1949 to 1973), about 2,600 tons per year of shredded battery casings were reportedly used as off-site fill material in West Doane Lake, on property belonging to Rhone-Poulenc Inc. (west of the Gould property). As the casings were placed, earthen fill was placed over the top of the casing material to create a level site. Matte was used as fill in the portion of Doane Lake on the northeastern boundary of the Gould property (referred to in the remedial investigation report as the "East" Doane Lake remnant). After shutdown of the smelter in 1973, shredded battery casings were placed on site over the matte and into the East Doane Lake remnant. The reported amount of shredded casings used as fill on the Rhone-Poulenc and Gould properties is estimated from production figures to be approximately 75,000 tons.

A discrepancy between the estimated volume of pre-1973 battery casings reportedly disposed off site on Rhone-Poulenc property and the estimated volume of casings actually found on Rhone-Poulenc property, indicates that approximately 40,000 cubic yards of pre-1973 casing material was unaccounted for. Estimates of the volume of casings used as fill on the Gould property indicate a surplus of approximately 56,000 cubic yards. Aerial photographs indicate that some or all of the 40,000 cubic yards of unaccounted pre-1973 casings have been used as fill on site, contrary to reported disposal practices.

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Waste sulfuric acid solutions from the battery breaking operations were discharged into the east Doane Lake remnant for most of the years the plant was in operation. Volumes of waste acid that were being discharged into Doane Lake during this period are estimated at 274,000 gallons per year. In 1976, treatment of this acid commenced with the treated waste being discharged into the City of Portland sewer system.

Other waste material identified in the study area included: 1) an alkaline hydrated lime waste from the manufacture of acetylene discharged into the east Doane Lake remnant; 2) shredded automobile body interiors placed on the property owned by Schnitzer Investments, to the east of the Gould property; and 3) demolition debris placed on the property owned by Rhone-Poulenc, west of the Gould property. The composition and quantity of these materials were not assessed during the Remedial Investigation.

Hydrogeology Investigation Results

The site is underlain by a variety of volcanic and sedimentary rocks, including the Scappoose and Columbia River Basalt deposits. Holocene age alluvial sands, silts and clays deposited by flooding of the Willamette River underlie the study area to depths of 38 to about 93 feet below the floodplain. A prehistoric channel of the Willamette River cut off by later alluvial deposits formed Doane Lake, which was present over most of the study area at the time of industrial development. Imported fill material placed into Doane Lake created the site for smelter construction.

The geology of the site affects the amount, movement and quality of ground water in the study area. Basalt flows with rubble tops contain most of the ground water and underlie the study area. These flows, numbering 12 to 14, dip to the northeast from the Portland Hills anticline under Forest Park into the Portland Basin containing the Willamette River.

The alluvium (below the fill layer) on site consists of a complex mixture of river channel sands, silts and clays. Chemical analyses of the alluvium for metals indicate that the range of concentrations found are for the most part within the range of background concentrations that have been reported for the area. Lead levels observed varied from 23 to 110 parts per million (ppm). The highest lead levels observed in the alluvium were near the contact point with the fill later added to Doane Lake.

A range of fill materials was placed into Doane Lake including metal slag, scrap metal, demolition debris, hydraulic dredge spoils, rock quarry spoils, shredded automobile interiors, and acetylene sludge as well as battery casings and matte. The fill is generally much more permeable than the alluvium. Metal contamination in the fill ranges locally up to several parts per million of chromium, cadmium, zinc, and arsenic. The pattern of contamination appears directly related to the known site history and types of fills placed within Doane Lake. No obvious pattern of contaminant migration is occurring within the fill materials. Lead concentrations of up to 10 percent lead have been observed within the area where battery casing fill has been placed.

Sediment samples taken within the east and west Doane Lake remnants showed the highest concentrations of lead. East Doane Lake remnant sediments had lead values ranging from 160 to 12,000 ppm. West Doane Lake remnant sediments were observed to have between 870 to 1,500 ppm. The Willamette River sediments taken upstream and downstream of the discharge area from the Gould property had observed lead concentrations of 26 to 56 ppm, equivalent to background levels reported for the Willamette River.

Precipitation runoff from the Gould property and from surrounding properties is the only other source of surface water on site. The east Doane Lake remnant discharges at high water levels into a storm sewer that subsequently enters the Willamette River. There is no surface discharge from the west Doane Lake remnant. Water is lost through percolation and evaporation. Tidal influences in the Willamette River were observed to fluctuate as much as 4 feet in a 24-hour period. Part of the Gould property is located within the 100-year floodplain.

Four water-bearing units were identified beneath the site. These units are the fill, the upper alluvial, the lower alluvial and the basalt. The units are hydraulically connected, but the properties vary widely with material type and permeability. Recharge occurs through precipitation, infiltration from the Doane Lake remnants, and lateral inflow. Horizontal hydraulic gradients varied from about 3 feet in 400 feet to 4 feet in 1,500 feet. The direction of ground-water flow is northward toward the Willamette River.

Dissolved lead concentrations up to approximately 0.21 ppm were found in ground water in the monitoring wells within the casing disposal areas. Elevated sulfate and lead concentrations were found in wells downgradient of the battery casing disposal area. The partitioning illustrated by total lead, total recoverable lead and dissolved lead indicate that dissolved lead concentrations in ground water are relatively low downgradient. The potential for lead migration exists only if pH were to decrease.

Surface soil concentrations of lead were high in only those areas sampled around the old plant site on the Gould property and on the Rhone-Poulenc property above the battery casings disposal area.

Air Investigation Results

Results of airborne lead sampling over the course of remedial investigations (April 1986 through January 1987) demonstrated that airborne lead concentrations at the Gould property boundaries are currently well below both federal and state air quality standards for lead. On several occasions significantly higher concentrations of airborne lead were observed for single days at one monitor. Observations by Dames & Moore personnel on site during those days attributed the higher readings to cleanup operations by a purchaser of the Alchem Western casing separation equipment. The investigation concluded that, with no disturbance of the material on site, airborne lead levels present no imminent public health hazard. However, remedial action will need to take into account that significant airborne lead levels may occur as contaminated materials are disturbed.

Biota Investigation Results

No data were located for contaminant uptake by plants on the site. However, the area is largely devoid of vegetation. Onsite occurrence of animals is low due to limited habitat. No data were located for contaminant concentrations in onsite fauna. Limited data on metal concentrations in Willamette River fish and invertebrates were available. Concentrations of lead ranged from 0.68 ppm in crayfish tissue to 0.24 ppm in fish tissue (peamouth). Three other fish species analyzed for tissue lead concentrations were all below the detection limit (0.1 ppm).

Bench Scale Studies

A bench scale study of limited scope was performed during the Remedial Investigation. Three types of coatings for battery casings were tested using the RCRA EP Toxicity Method for determining the effectiveness of each coating's ability to reduce leachable lead. The coating formulations were not effective in reducing the leachable lead levels below acceptable levels.

Batch adsorption tests were run to assess the ability of soils in the study area to retard the transport of lead in ground water. Results suggest that the lead adsorptive capacity of the study area soils and sediments is quite high, and thus the soils are effective at inhibiting lead migration.

Leach potential tests were performed to evaluate the potential for lead to leach from battery casings, matte and contaminated soils and sediment under varying ground-water acidity/alkalinity (pH) conditions using actual ground water from the site. Results confirm the amphoteric nature of lead; its solubility increases as acidity or alkalinity changes from a pH of 8 to 9.

Public Health and Environmental Concerns

Potential human receptors in the study area are primarily workers at surrounding places of employment and those living in the few residences near Forest Park. Except for a part-time caretaker who oversees site activities, the Gould site itself is vacant and has limited access. Potential pathways for human exposure are primarily inhalation of contaminant-laden airborne dust and soil ingestion. Except during periods of heavy site activity, airborne lead levels as noted above are below air quality standards and no known drinking water wells are located on or downgradient from the site.

Potential pathways of contaminant exposure to flora and fauna are primarily through uptake of contaminated water or ingestion of contaminated plant material or pond sediments. Bioaccumulation of heavy metals is possible through the food chain. Transfer to humans is possible through game birds known to be present in the area. In the Doane Lake remnants, there are no aquatic species present that might be consumed by humans.

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NW-5-3

EPA'S PROPOSED ALTERNATIVE

RECEIVED

MAR 07 1988

Environmental Resources

MONITORING

GROUNDWATER WELLS
AIR MONITORS

BATTERY CASINGS

RECYCLE SURFACE AND SUBSURFACE CASINGS
ESTIMATE ABOUT 80,000 TONS TO RECYCLE
CONSTRUCT ON-SITE TREATMENT FACILITY
OPERATE FOR TWO YEARS
CLEAN MATERIAL EITHER RECYCLED, SENT TO SANITARY LANDFILL OR CAPPED
MATERIAL THAT FAILS EP TOX GOES TO RCRA LANDFILL

CONTAMINATED SOILS, SEDIMENT AND MATTE

TREATED TO BIND LEAD IN THE SOIL
ESTIMATE ABOUT 20,000 YDS TO BE TREATED
SOIL TREATMENT FACILITY CONSTRUCTED ON-SITE

SURFACE TREATMENT

IMPORT TOPSOIL
REVEGETATE

INSTITUTIONAL CONTROLS

PREVENT EXPOSURE TO CONTAMINATED GROUNDWATER, SURFACE WATER

ADDITIONAL STUDY

EXPANDED GROUNDWATER MONITORING
FOCUS ON ORGANICS AS WELL AS LEAD

cc: J. Dunn
L. Flaherty

SUMMARY OF ALTERNATIVES

NO ACTION ALTERNATIVE

MONITORING
INSTITUTIONAL CONTROLS

ALTERNATIVE 2C

4-5 million Cost

Prefered by N. L. Gould

MONITORING
SURFACE WATER TREATMENT
SURFACE TREATMENT AND CAPPING
RECYCLE SURFACE PILES OF CASINGS
INSTITUTIONAL CONTROLS

EPA'S PREFERRED ALTERNATIVE (10C)

15-20 " million cost

MONITORING
RECYCLE OF ALL BATTERY CASINGS
TREATMENT OF SOILS, SEDIMENT AND MATTE
SURFACE COVER
INSTITUTIONAL CONTROLS

ALTERNATIVE 21

15-20 million Cost

MONITORING
SURFACE WATER TREATMENT
DISPOSAL OF CASINGS IN ON-SITE RCRA LANDFILL
TREATMENT OF SOILS, SEDIMENT AND MATTE
INSTITUTIONAL CONTROLS

United States
Environmental Protection
Agency

Region 10
1200 Sixth Avenue, HW-113
Seattle WA 98101

SUPERFUND Project Update

NL/GOULD SITE
PORTLAND, OREGON

PROPOSED PLAN

The U. S. Environmental Protection Agency (EPA) has recently accepted a draft feasibility study of cleanup alternatives for the NL/Gould, Inc., Superfund site. EPA has evaluated the study and alternatives and is proposing the following cleanup plan (described in more detail on page 6):

- remove battery casings on and beneath the site and treat them for proper disposal of lead, plastic, and other materials;
- treat lead-contaminated soil and sediments with a chemical additive to bind the lead to the soil and keep the contamination on-site; and,
- do additional studies of groundwater pollution in the Doane Lake area and, at a later date, decide if additional cleanup is necessary.

PUBLIC COMMENT PERIOD

February 16 - March 18, 1988

EPA is seeking comments on the NL/Gould site feasibility study and the Agency's proposed plan. The studies and other site records are available for review at locations listed on the last page.

Send comments to:
David Tetta
U.S. EPA
1200 Sixth Avenue (HW-113)
Seattle, Washington 98101
(206) 442-2138

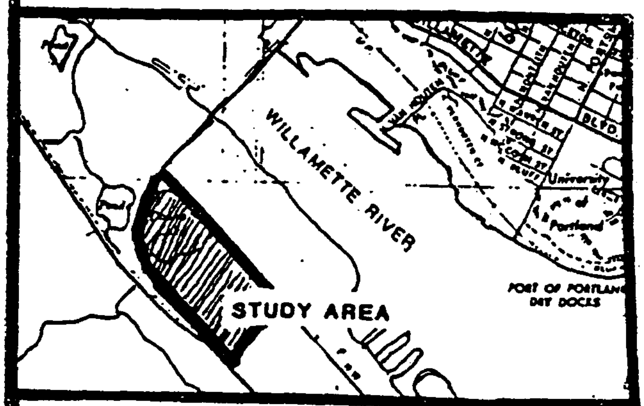
In a few weeks, after consideration of your comments, EPA hopes to select a remedy for the site. Comments should be postmarked by March 14, 1988, to ensure their consideration.

PUBLIC MEETING

February 18, 1988
7:00 PM
Northwest Service Center
1819 NW Everett

Everyone is encouraged to attend the public meeting, ask questions, and provide written comments to help EPA decide which cleanup action would work best for the community and the site.

LOCATION OF NL/GOULD SITE



**For Your Information
This Fact Sheet Contains
Brief Summaries of:**

- Site history
- Results of environmental studies
- Cleanup alternatives developed to remedy chemical contamination at the site
- EPA's proposed plan for cleanup
- What happens next, and
- How to obtain further information

SITE HISTORY

The site is located in the heavily industrialized area northwest of downtown Portland known as the Doane Lake area. It is situated approximately 1,000 feet southwest of the Willamette River.

Lead acid battery recycling operations began in 1949 under the ownership of Morris P. Kirk & Sons, a subsidiary of NL Industries, Inc. In 1971, NL Industries, Inc, bought the site and then sold the site to Gould in 1979. The facility has been closed since August 1981.

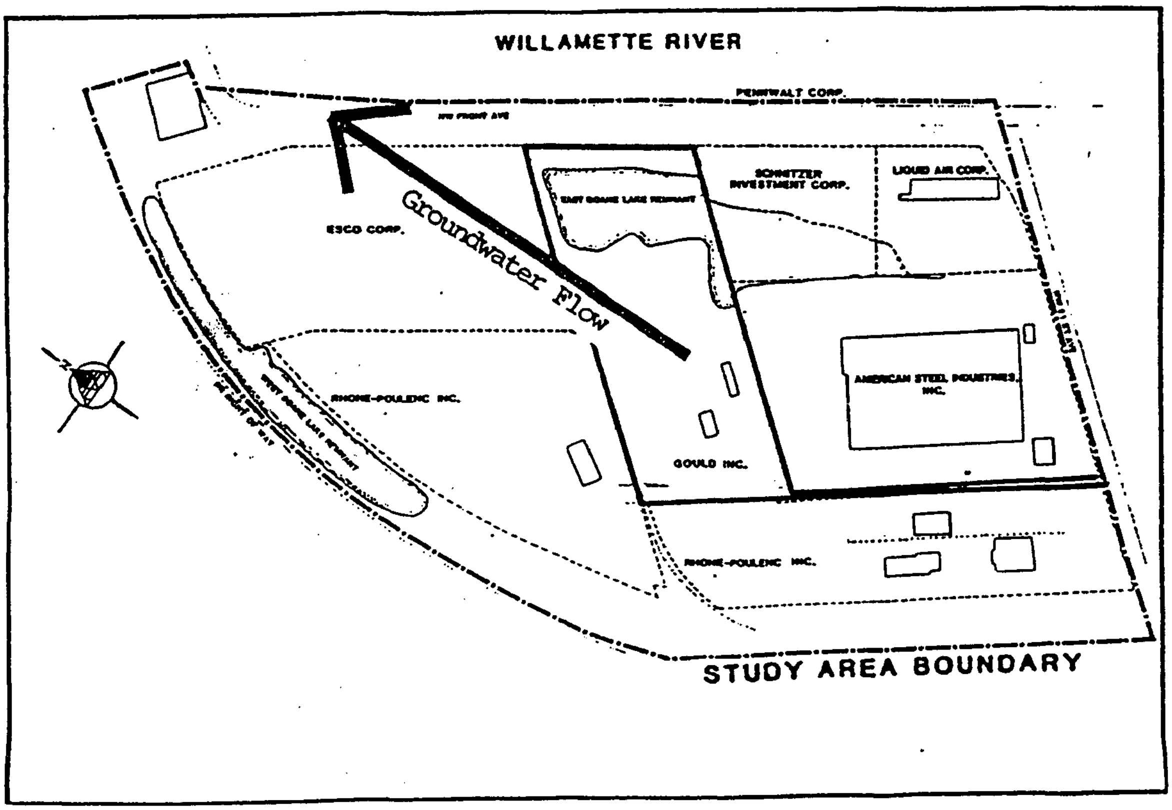
During the facility operations, recycled batteries were decased, fragmented, and disposed of in Doane Lake or next to the recycling facility. About 75,000 tons of battery casings were disposed of at the site, and about 6 million gallons of acid were discharged into Doane Lake.

In 1981 and 1982, a joint environmental investigation was conducted by EPA and the Oregon Department of Environmental Quality (DEQ) on the extent of chemical contamination. In 1983, EPA included the site on the National Priorities List of sites for Superfund investigations and possible cleanup.

As a result of the investigation, NL Industries, Inc., and Gould, Inc., were identified by EPA as potentially responsible parties for the site. They have agreed to conduct environmental studies as required by the Superfund law with EPA overseeing their work.

Environmental studies have been conducted at the site to determine the extent of contamination, evaluate human health risks and develop clean-up alternatives for the site.

MAP OF STUDY AREA
SHOWING DIRECTION OF GROUNDWATER FLOW



RESULTS OF THE ENVIRONMENTAL STUDIES

Lead, arsenic, zinc, cadmium, and chromium contamination were found in soils, battery casings, and groundwater at the site. Lead is of the most concern in terms of health and environmental impacts at this site.

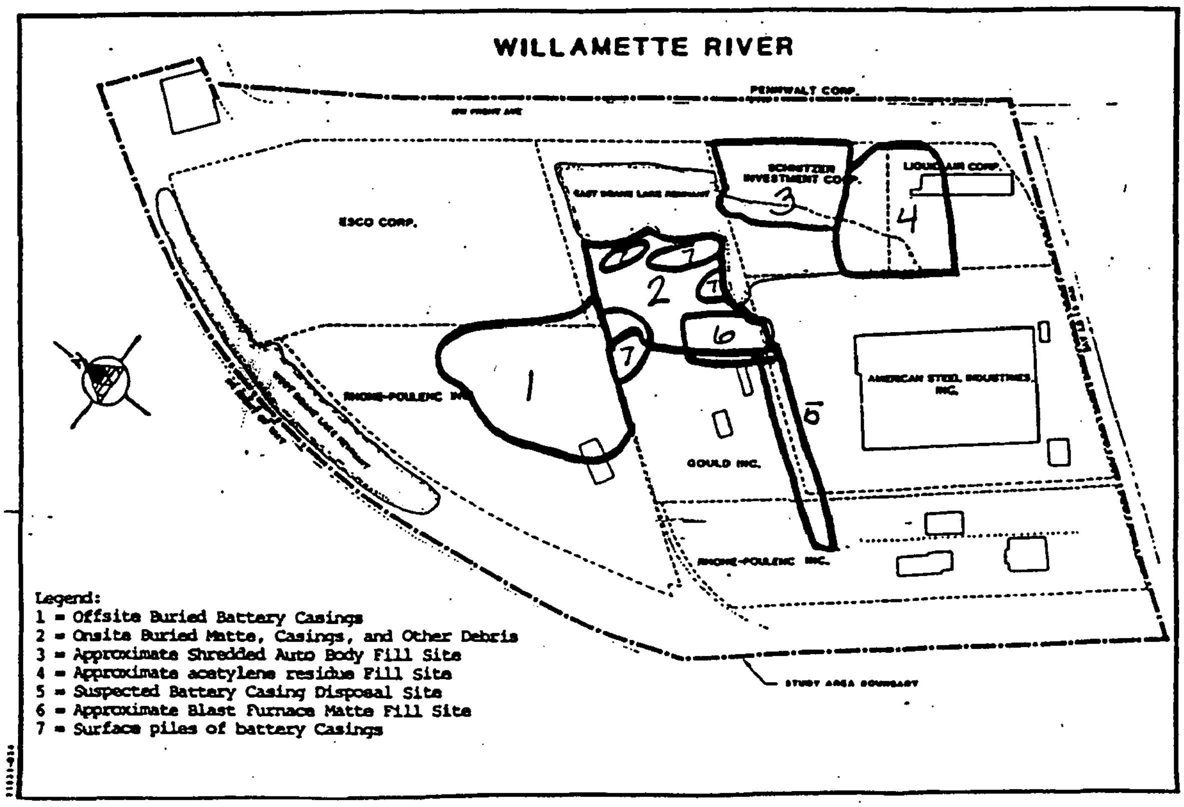
The study revealed that there are several groundwater-bearing layers of fill, soil and rock (aquifers) beneath the site. The groundwater immediately beneath the site is contaminated with lead above drinking water standards. Lead concentrations in the deeper basalt aquifer are below the standards and the water is safe for consumption. The basalt aquifer is part of the main regional aquifer that supplies drinking water to the area.

Groundwater flow is generally in the north-northwest direction toward the Willamette River. Movement of lead in the groundwater away from the site is happening at a very slow rate.

Surface water samples were taken from Doane Lake and the Willamette River in locations near the site. Water samples from Doane Lake exceeded the drinking water standard for lead, while samples from the Willamette River were below the sstandard. Sediment samples from the Willamette River contained lead, but at levels similar to background values.

High airborne lead concentrations were measured during site operations when materials were being disturbed. However, lead concentrations were found to be below the federal standard when tested on a quarterly basis.

MAP OF STUDY AREA
SHOWING BATTERY CASINGS AND SOIL CONTAMINATION



EPA's RECOMMENDED CLEANUP ALTERNATIVE

EPA is proposing the alternative labeled 10C in the table and the Feasibility Study. EPA's proposed plan would include:

- Removing all surface and sub-surface battery casings and treating them to separate the component materials (such as lead, plastic and ebonite) for recycling or disposal off-site. A treatment facility would be constructed at the site to treat the battery casings.

- Materials that cannot be recycled and which do not pass EPA's criteria for non-hazardous waste would be sent to a hazardous waste landfill. Materials which do pass EPA's criteria for non-hazardous waste might be left on site and included in the soil cap described below.

- Surface soils, sub-surface soils, matte, and East Doane Lake sediments with levels of lead that fail the EPA standards would be removed and treated with an additive to bind the lead. A treatment facility would be constructed at the site to treat contaminated sub-surface materials.

- After the soils have been treated, the stabilized material would be backfoulded, graded, and recompated. A soil cap and grass cover would be placed over the backfould to prevent weathering of stabilized soil.

- Continued monitoring of groundwater in the study area while additional evaluation of the groundwater is underway. Institutional controls such as deed restrictions would be used to ensure that the contaminated surface water or groundwater does not pose a health threat during the time that the additional study is being done. In addition, air monitoring stations would be located at the site during cleanup actions to ensure that lead and other metals do not cause air quality problems.

EPA is proposing this alternative because it is the one which best satisfies the evaluation criteria described above for the problems which are fully defined (soils and battery casings), while allowing for more study where needed (groundwater).

EPA believes that the recommended alternative described here would best protect public health and the environment and meet relevant federal and state requirements.

CLEANUP ALTERNATIVES CONSIDERED

Cleanup alternatives for this site were evaluated to see if they meet the federal and state criteria in Superfund and other environmental laws, and to evaluate their effectiveness. An extensive list of 30 potential alternatives was assembled for this site and several of these were selected for detailed evaluation. Each of the alternatives in the Feasibility Study and in the table below include different combinations of remedial actions such as:

Monitoring air and groundwater monitoring to determine whether any lead or other contamination is migrating in the environment.

Surface capping including importing topsoil and revegetating the surface.

Soil treatment techniques like applying lime to reduce the mobility of the lead in the surface soil. Subsurface soil, matte and sediment treatment would include techniques that would stabilize the materials in a cement-like complex.

Recycling and treatment of the battery casings would involve running them through a separation unit to separate out the lead, plastic, lead oxide and ebonite. Additional treatment may be required to clean these output streams.

Institutional controls means the use of either zoning measures or restrictions on the title to the Gould property to limit access to this site.

EVALUATION CRITERIA

The table on the next page presents four of the final eleven alternatives considered by EPA and shows you how we have ranked them against the evaluation criteria. The criteria are:

Long and short term effectiveness, which compares how effective these alternatives are in taking care of the problems at the site over the short term (about 1 year) and the long term (5 years or more);

Reduction in mobility, toxicity or volume is related to the question of whether the treatment we are using actually reduces any of these properties of the contamination. For instance, stabilization reduces the ability of lead to migrate in the groundwater (mobility);

Feasibility, which deals with how easy it is to construct the chosen alternative and make it work;

Overall protection of human health and the environment of the remedy;

Compliance with environmental standards is evaluated because the chosen action at a Superfund site is required by law to comply with all applicable laws and regulations;

Cost; and

Community acceptance, the final criteria, which we evaluate on the basis of comments we get during this comment period.

Summary of the Detailed Evaluation of Alternatives

CRITERIA: Remedial Alternatives	Short-Term Effectiveness	Long-Term Effectiveness	Reduction in Toxicity or Mobility of Contamination	Feasibility	Overall Protection of Human Health & the Environment	Compliance with Environmental Standards	Cost
Alternative 1 (No Action) *Monitoring *Institutional Controls	-No short-term safety concerns. -Approximately 4 months to completion.	-Indefinite need to provide well and pump maintenance. -Contamination still present.	-No reduction in toxicity, or mobility	-No construction problems. -Routine operation & maintenance requirements	-Continued risks to on-site workers and potential residents from soil ingestion and airborne lead. -Risks to aquatic species.	-Standards for lead in water, battery casings, and soils not met	$1,000,000
Alternative 2C *Monitoring *Surface Water Treatment *Surface Treatment and *Capping *Treatment/Disposal of Surface Casing Piles *Institutional Controls	-Possible exposure to airborne contaminants from fugitive dust. -Hauling of contaminated materials on public roads.	-Some reduction of existing and future risks. -Potential problems with soil cap. -Institutional controls may not be effective.	-Partial reduction in toxity, movement, and volume of lead	-Technically and administratively feasible. -Technologies and materials are available.	-Adequate reduction of existing risks to human health and the environment but may not be protective over long term period.	-Standards for surface water and air met. -Soils and casings do not meet standards.	$5,000,000
Alternative 10C • Monitoring • Surface Water Treatment • Topsoil/Revegetate • Battery Casings Treatment/Disposal • Soil, Sediment Stabilization • Institutional Controls	-Estimated time to completion about 5 years. -Possible exposure to airborne lead from disturbing soils and casings.	-Effective in minimizing any future release of lead into the environment.	-Greatly reduces mobility and volume of lead contamination. -Some potential problems with recycling of portions of buried casings.	-Recycling of battery casings is a proven technology, and treatability studies indicate it can be applied to this site.	-Provides protection of health and environment by removing as much lead as possible from the site.	-Alternative meets all identified standards for soils and casings. -Standards for surface and groundwater to be addressed in future study.	$15,000,000
Alternative 21 • Monitoring • Surface Water Treatment • Surface Capping • On-site Disposal of Casings • Soil, Sediment Treatment/Disposal • Institutional Controls	-Estimated time to complete is about 4 yrs. -Landfill design and review may delay work. -Possible exposure during excavation. -Wastes exposed to environment during construction of landfill.	-Lead is either stabilized or contained. -Landfill may leak.	-Partial reduction in mobility from treatment of soils and sediments.	-Technically and administratively feasible, services and materials are available. -As with 10C, some design work is required.	-Provides health and environment protection by treating or containing lead. -Landfill may not be completely effective.	-Meets most standards.	$21,000,000

WHAT HAPPENS NEXT

PUBLIC COMMENT This is only a proposal. EPA will make a cleanup decision in consultation with the State DEQ after all comments have been reviewed and considered. All comments received during the comment period will be responded to in EPA's decision.

DECISION AND DESIGN EPA is hoping to make a decision about how to clean up this site by the end of March. At that time we will begin negotiating with NL and Gould to get the work done. The first work to be done will be engineering designs for the cleanup alternative that we finally choose and tests to make sure that the treatment techniques and equipment we select actually work. This should take 6 to 9 months.

FURTHER INVESTIGATIONS While we are doing this we will also be doing an additional study of groundwater contamination in the Doane Lake area. This study will help us decide whether action needs to be taken to deal with the contamination underneath the site. Right now we are doing the planning for this study. The study will also address organic contamination as well as lead contamination. We are planning to begin this study late this year. EPA has notified several companies in the Doane Lake area that they may be responsible for this contamination and will be working with them to do the study.

HOW TO OBTAIN FURTHER INFORMATION

Copies of all the documents described here and the entire administrative record for the site are available for your review at the following locations:

Multnomah County Library
St John's Branch
7510 N Charleston Avenue
Portland, Oregon

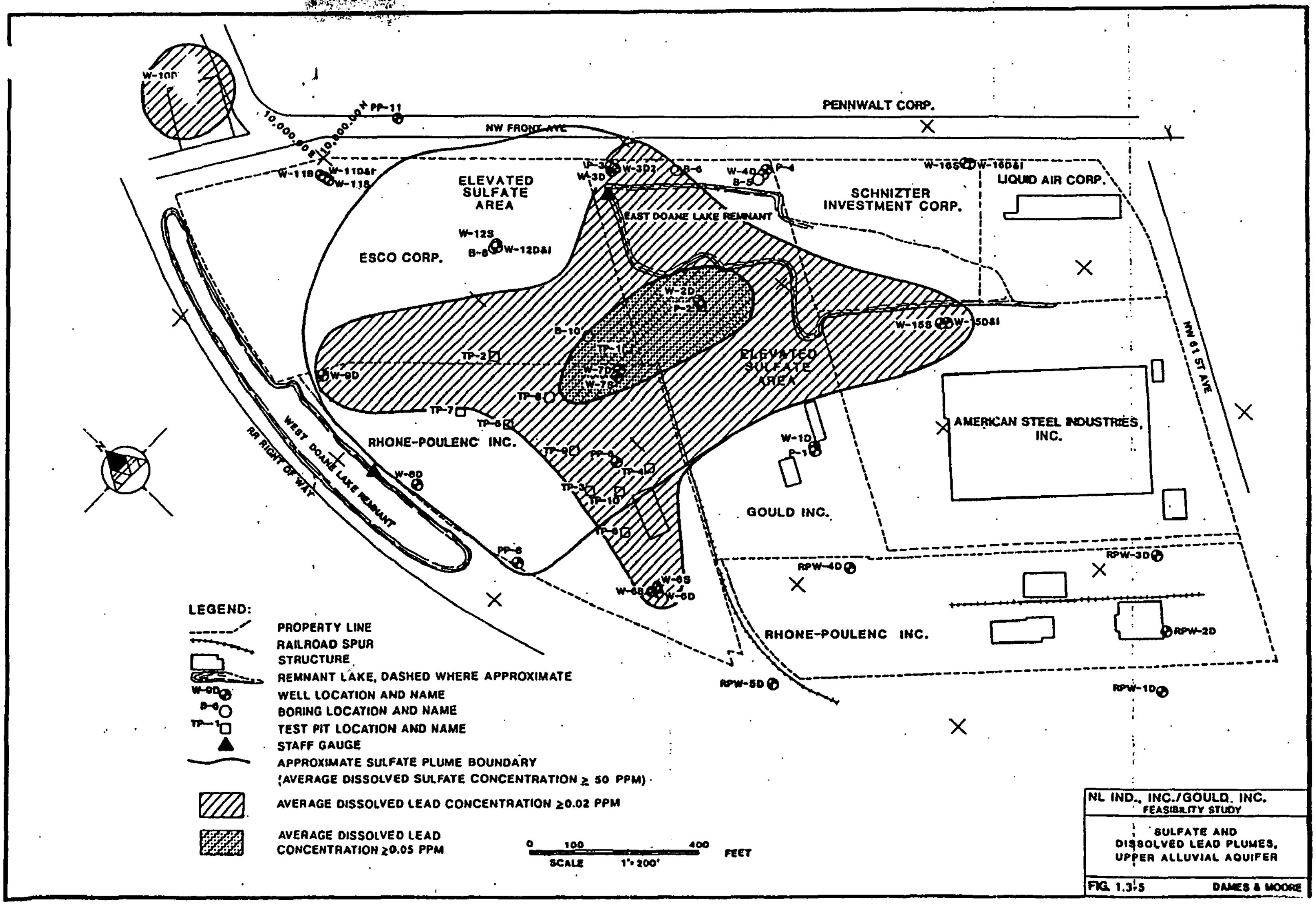
Linnton Community Center
10614 NW St Helens Road
Portland, Oregon

Oregon Department of Environmental Quality
Remedial Action Section
811 SW Sixth Avenue
Portland, Oregon

EPA Library
1200 Sixth Avenue, 10th Floor
Seattle, Washington

If you have any questions or would like to receive more information, please call the EPA site manager listed below. Written comments should also be directed to the same person.

David Tetta
U.S. EPA
1200 Sixth Avenue (HW-113)
Seattle, Washington 98101
(206) 442-2138



NL IND., INC./GOULD, INC.
FEASIBILITY STUDY

SULFATE AND DISSOLVED LEAD PLUMES, UPPER ALLUVIAL AQUIFER

FIG. 1.3-5 DAMES & MOORE

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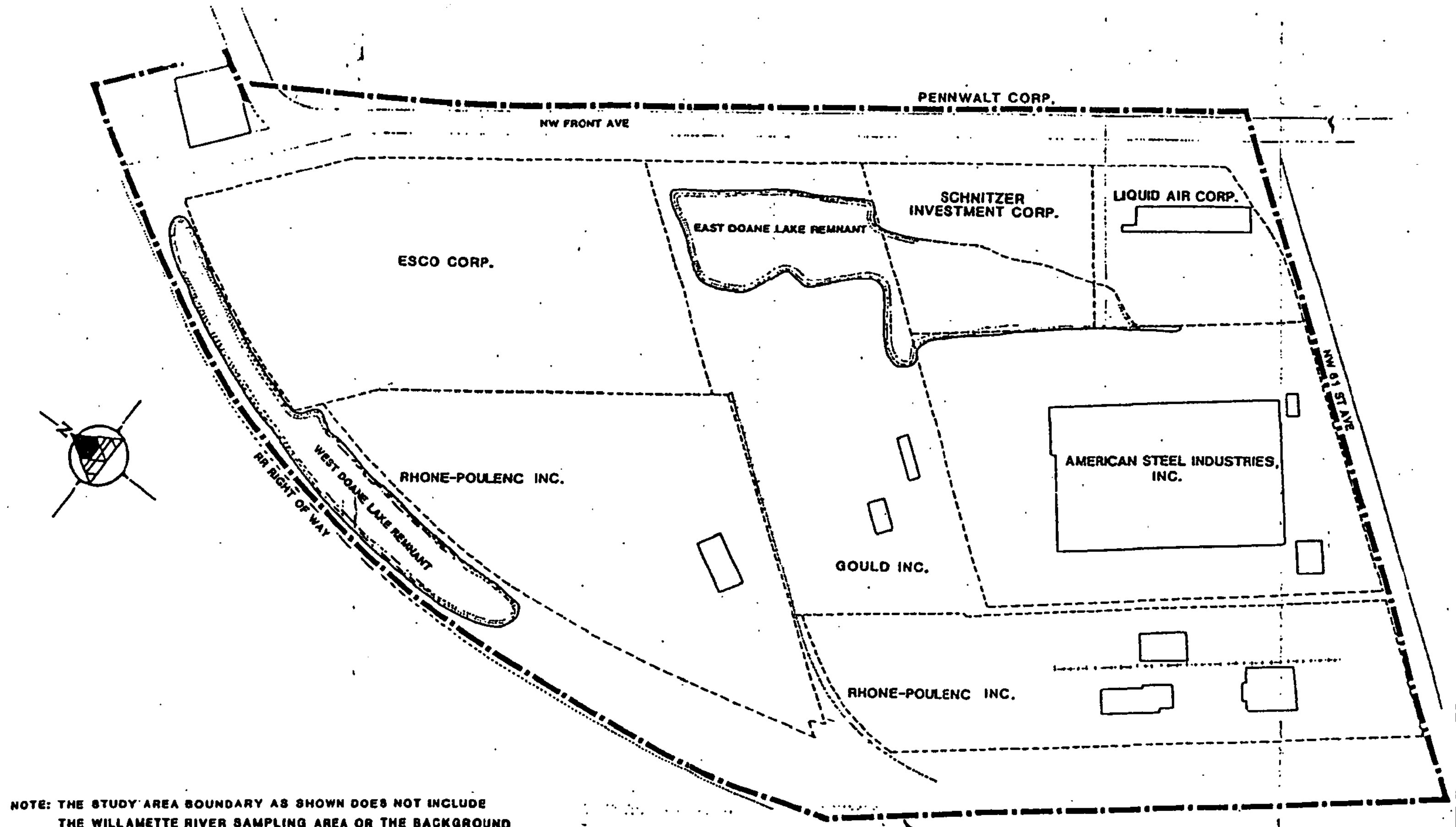

NOTE: THE STUDY AREA BOUNDARY AS SHOWN DOES NOT INCLUDE THE WILLAMETTE RIVER SAMPLING AREA OR THE BACKGROUND SURFACE SOIL SAMPLING AREAS SOUTH OF ST. HELENS ROAD.

Reference:
From a topographic survey map dated May 16, 1986, by D.E. Mars & Associates, Gresham, Ore., for Dames & Moore

0 100 400 FEET
SCALE 1" 200'

NL IND, INC./GOULD INC.
FEASIBILITY STUDY

STUDY AREA LOCATION MAP

1831-034

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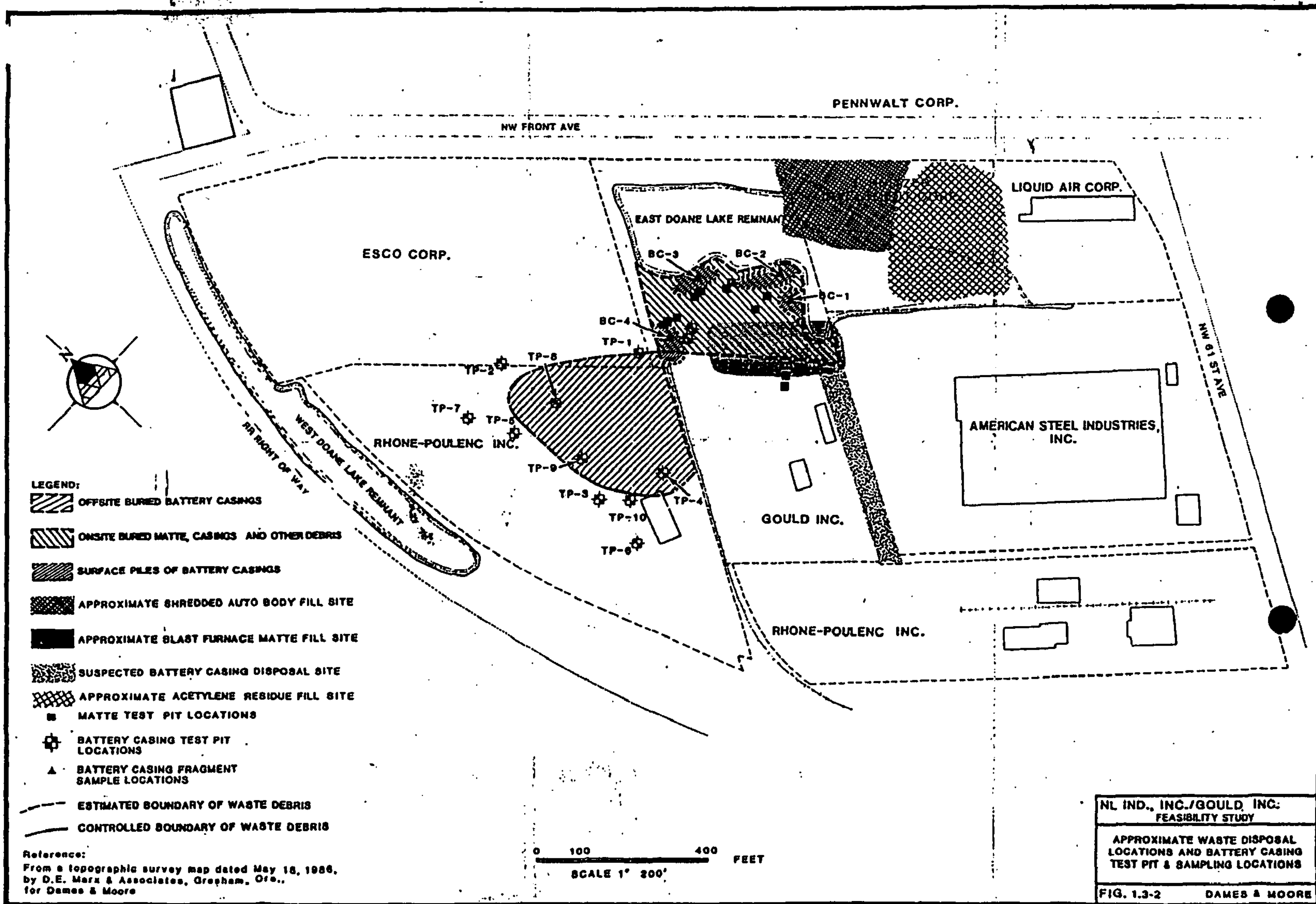
[redacted]



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NW NW-S-3

NE NWNG

S Gould

2/11/88

Fred Hanson - Director DEQ

EPA split ROD final on surface cont @ Gould Site

GW is separated

needs separate program for GW

EPA taking final steps & request info on GW

Issue 104 notice letter.

Gould + NL - RI/FS - Dames + Moore finalized this week

public hrg 2/18

will issue split ROD

plan to N extend site

flow from Gould → north

Sec 104

Matls handled, how + qty, disposed, transport

of site,

Spills

Env, invest, taken

wells

und stg tks,

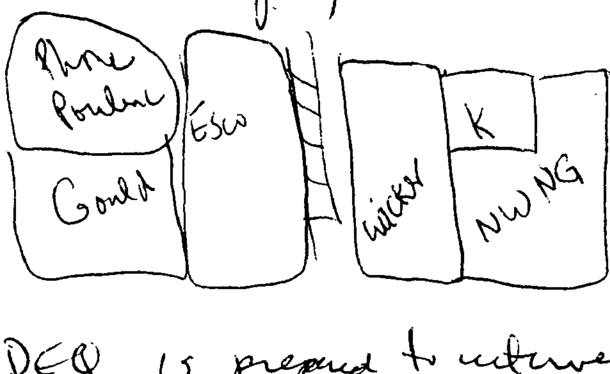
insurance policies

104 ltr

respon 30 days

meet in July - voluntary study?

lean to 2) 1st allocation



consent

ord 1) DEQ is prepared to intervene now + take over if we commit

2) DEQ will intervene in July

Koppers021609

Caucus –
let DEQ handle from Sec 104 ltr thru Study
2nd pos - state take over at study phase

Recommend
Hansen doesn't think 104 ltr step, DEQ
Not sure that there is any real gain

STOEL RIVES BOLEY
JONES & GREY

ATTORNEYS AT LAW
SUITE 2300
STANDARD INSURANCE CENTER
900 SW FIFTH AVENUE
PORTLAND, OREGON 97204-1268

Telephone (503) 224-3380
Telecopier (503) 220-2480
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Telex 703455
Writer's Direct Dial Number

294-9213

RECEIVED

FEB 16 1988

Environmental Resources

February 12, 1988

Mr. Edmund L. Bolin
Northwest Natural Gas Company
220 NW Second Avenue
Portland, OR 97209

Mr. John Pittman
Wacker Siltronic
PO Box 03180
Portland, OR 97203

Mr. Roger Sherwood
ESCO
PO Box 10123
Portland, OR 97210

Mr. Robert Ferguson
Rhone-Poulenc
PO Box 10224
Portland, OR 97210

Mr. Jordan Dern
Keystone Environmental Resources
436 Seventh Avenue, Suite 1940
Pittsburgh, PA 15219

Mr. Jim Tracewski
NL Industries, Inc.
Hightstown, NJ 08520

Mr. George Markwood
Pacific Northern Oil Company
7900 NW St. Helens Road
Portland, OR 97210

Mr. Roger Neu
Schnitzer Investment Corp.
3200 NW Yeon Avenue
Portland, OR 97210

Mr. Larry Patterson
Pennwalt Chemical Corp.
6400 NW Front Avenue
Portland, OR 97210

Gentlemen:

This will confirm our scheduled meeting for Tuesday, March 29, 1988, to exchange data and discuss the technical aspects of the proposed expanded DEQ/EPA groundwater study for the northern Doane's Lake area. I have arranged for the use of our 24th floor north conference room and we will begin the meeting at 9:00 a.m. At that time we can decide if we wish to break for lunch or have sandwiches brought in.

We trust that each party will bring sufficient copies of its response to the CERCLA § 104 letter we were told to expect at our meeting with Fred Hansen on February 11, and copies of at least the executive summary of any groundwater studies that each party may have already undertaken on its own property.

We are looking forward to seeing all of you again next month. If you have any questions or comments, please feel free to call me.

Very truly yours,

Dick

Richard D. Bach

RDBS.030:twa

NW-S-3

KEYSTONE
ENVIRONMENTAL RESOURCES, INC.

RECEIVED Sent 8-12

AUG 11 1987

CC: LFR J. Oxford JO 8/12

Environmental Resources

Interoffice Correspondence

To	J. Dern	From	R. D. Hepner
Location	Pittsbrugh	Location	Monroeville
Subject	Northwest Terminal (455700)	Date	August 10, 1987

Attached are results of requested soil analyses on samples collected at the Northwest Terminal on July 1, 1987.

R. D. Hepner

R. D. Hepner

RDH/kaw

Attachments

cc: C. Miller

SPECTRIX MONROEVILLE

TABLE OF CONTENTS PRODUCED ON 09/08/87 AT 14:03 PAGE 1

SAMPLE #	SOURCE	DESCRIPT	DATE-COL	DATE-REC	ORD #
87070069	SOIL-SUMP AREA	SOILS	07/01/87	07/07/87	M8707018
87070070	COMP-LEACH AREA	SOILS	07/01/87	07/07/87	M8707018

SPECTRIX MONROEVILLE

TABLE 1. SUMMARY OF ANALYTICAL DATA PRODUCED ON 08/03/87 AT 14.05 PAGE 1

SAMPLE #	RSLT.LNE		SOURCE
% SOLIDS			
87070069	% Solids @103 C. . . .	93.2	SOIL-SUMP AREA
87070070	% Solids @103 C. .	95.6	COMP-LEACH AREA
OIL & GREASE TOTAL RECOVERABLE, GRAVIMETRIC			
87070069	Oil & Grease, mg/Kg	570	SOIL-SUMP AREA
87070070	Oil & Grease, mg/Kg. .	3230	COMP-LEACH AREA

The above results are on as received basis

SPECTRIX

440 COLLEGE PARK DR.
MONROEVILLE, PA 15146
(412) 733-9500
FAX (412) 327-6990

To	R. D. Hepner	From	Vaughn Romell
Location	Spectrix	Location	Absorption Spectroscopy
Subject	Northwest Terminal (4557)	Date	August 5, 1987

Your samples of Freon extracts from soil have been examined by infrared spectral procedures for characterization with the following results:

Your Sample No.	AL No.	Identification
Blank	171487	Mixture of a phthalate ester and an aliphatic hydrocarbon (oil).
87070069	171488	Polynuclear aromatic hydrocarbons (creosote components, similar to a "whole" creosote) + a highly oxidized aliphatic hydrocarbon (petroleum derivative and/or fatty acids). Creosote/oil Ratio[1/] = 61/39.
87070070	171489	Polynuclear aromatic hydrocarbons but rich in anthracene, acenaphthene, pyrene and other high-boiling creosote components (indicating a devolatilized creosote fraction). Oxidized aliphatic hydrocarbon also present, but less than 87070069. Creosote/oil Ratio[1/] = 78/22.

1/ The creosote/oil ratios were calculated as mixtures of Grade 1 creosote and Nujol mineral oil.

TABLE 2: SUMMARY OF PAH DATA
============================

Sample: 87070069

Source: SOIL-SUMP AREA
Description: SOLID

Date Collected: 07/01/87
Date Received: 07/07/87

Clean up Method

Date Extracted: 07/22/87
Date Analyzed: 07/30/87

silica gel clean-up___yes ___no
florisil clean-up ___yes ___no
alumina clean-up ___yes ___no
sulfur clean-up ___yes ___no

Polynuclear Aromatic Hydrocarbons

Acenaphthene........	<1000
Acenaphthylene........	<1000
Anthracene	3000
Benzo(a)anthracene	2950
Benzo(a)pyrene.......	2950
Benzo(b)fluoranthene.	7540
Benzo(g,h,i)perylene.	10300
Benzo(k)fluoranthene..	<1100
Chrysene..............	3720
Dibenz(ah)anthracene..	13400
Fluoranthene.........	16500
Fluorene..............	4000
Indeno(123-cd)pyrene.	5160
Phenanthrene.........	3540
Pyrene...............	17700

Other Polynuclear Aromatic Compounds tested:

Carbazole..........	1920
Naphthalene........	5050

The above results are reported in ug/g

All PAH identifications are from retention data only.

TABLE 2: SUMMARY OF PAH DATA
============================

Sample: 87070070

Source: COMP-LEACH AREA
Description SOILS

Date Collected: 07/01/87
Date Received: 07/07/87

Clean up Method

Date Extracted: 07/22/87
Date Analyzed. 07/31/87

silica gel clean-up ___yes ___no
florisil clean-up ___yes ___no
alumina clean-up ___yes ___no
sulfur clean-up ___yes ___no

Polynuclear Aromatic Hydrocarbons

Acenaphthene	10000
Acenaphthylene	10000
Anthracene	765000
Benzo(a)anthracene	132000
Benzo(a)pyrene	41900
Benzo(b)fluoranthene	47900
Benzo(g,h,i)perylene	46200
Benzo(k)fluoranthene	16400
Chrysene	137000
Dibenz(a,h)anthracene	44500
Fluoranthene	640000
Fluorene	147000
Indeno(123-cd)pyrene	32[illegible]00
Phenanthrene	291000
Pyrene	545000

Other Polynuclear Aromatic Compounds tested:

Carbazole	130000
Naphthalene	125000

The above results are reported in ug/kg

All PAH identifications are from retention data only

NW-S-3

NORTHWEST NATURAL GAS COMPANY

220 N.W. SECOND AVENUE PORTLAND, OREGON 97209

(503) 226-4211

Sent 8-10
cc: MRU
LFF
✓ 8/7

RECEIVED

AUG 6 1987

Environmental Resources

August 3, 1987

Mr. Jordan Dern
Koppers Company, Inc.
Environmental Services
436 Seventh Avenue
Pittsburgh PA 15219

Re: Northern Doane's Lake Investigation

Dear Jordan:

Enclosed, for your information, is CDM's estimate of the cost of performing the study outlined in the work plan presented to the DEQ last Thursday. Costs to date for preparation of the work plan have been $22,321.90.

Sincerely,

E.L. Bolin, Manager
Land & Claims Department

ELB:k

CDM

environmental engineers, scientists,
planners, & management consultants

CAMP DRESSER & McKEE

Riverpoint
2300 15th Street, Suite 400
Denver, Colorado 80202
303 458-1311

July 27, 1987

Mr. E. L. Bolin, Manager
Land and Claims Department
Northwest Natural Gas Company
220 N.W. Second Avenue
Portland, Oregon 97209

Dear Ed:

Enclosed please find our preliminary cost estimate for completion of the work scope described in the work plan document for the North Doane's Lake Site Investigation. The costs assume reasonable rather than worst case conditions. The two large cost items are laboratory ($32570) and drilling costs ($34505). These estimates are preliminary and we anticipate that lower costs will result during bidding for these items. The total estimated cost for the studies are summarized in detail on the attached tables for both labor and other direct costs. The total costs are estimated to be $60,911 for labor and $101,417 for other direct costs for a total of $162,328. This is substantially above our early preliminary cost estimate due to changes in site operation requirements under OSHA regulations that affect both professional personnel and contractors. I will call to discuss these costs on Tuesday prior to our scheduled meeting.

Sincerely,

Michael J. Smith

Michael J. Smith
Project Manager

/mjs
Enclosure

NORTH DOANE'S LAKE SITE INVESTIGATION
PRELIMINARY COST ESTIMATE

OTHER DIRECT COST ESTIMATE

EXPENSE CATAGORY	UNIT RATE	UNITS	TASK 1 HEALTH & SAFETY PLAN PREP UNITS	TASK 1 $	TASK 2 SURFACE SOIL SAMPLING UNITS	TASK 2 $	TASK 3 SEDIMENT SAMPLING UNITS	TASK 3 $	TASK 4 DRILLING, SUB-SURFACE SAMPLING & WELL INSTALLATION UNITS	TASK 4 $	TASK 5 ON-SITE UV-SPECTROPHOTOMETRIC ANALYSIS UNITS	TASK 5 $	TASK 6 GROUND/SURFACE WATER SAMPLING UNITS	TASK 6 $	TASK 7 SITE INVESTIGATION REPORT UNITS	TASK 7 $	TASK 8 PROJECT MANAGEMENT UNITS	TASK 8 $	TOTAL ESTIMATED COST (ODC'S) $
EXTERNAL COST																			
AIRFARE DEN-PDX	390	TRIP			2	780	1	390	3	1170	2	780	3	1170					4290
VEHICLE RENTAL	40	DAY			12	480			30	1200			8	320					2000
PERSONNEL PER DIEM	65	MAN/DAY			16	1040	2	130	42	2730	30	1950	10	650					6500
COMMUNICATIONS	1	$															250	250	250
SHIPPING	1	$			400	400			400	400			600	600			200	200	1600
UV SPECT. RENTAL	2000	MONTH									1	2000							2000
LAB TRAILER RENTAL	700	MONTH									1	700							700
PROTECTIVE EQ.	50	MAN/DAY							40	2000			8	400					2400
MISC. & SUPPLIES	1	$					200	200	1500	1500			600	600					2300
DRILLING																			
-MOBE/DEMOB	4500	LUMP SUM							1	4500									4500
-DRILLING & SAMPLING	11.00	FOOT							780	8580									8580
-RIG DECON	150	BORING							21	3150									3150
-PERSONNEL PROT.	110	DAY							20	2200									2200
-HOURLY COMPLETION	300	WELL							14	4200									4200
-SCREEN & CASING(SHALLOW)	425	WELL							9	3825									3825
-SCREEN & CASING(INTERMED.	1050	WELL							5	5250									5250
-OTHER COMPLET. MAT.	200	WELL							14	2800									2800
SUB-TOTAL DRILLING										34505									34505
LABORATORY-SOILS																			
-PNA'A	240	SAMPLE			5	1200	6	1440	13	3120									5760
-PRIORITY POLUT.	1000	SAMPLE			3	3000			6	6000									9000
-PH,CYANIDE,TOT IRON	110	SAMPLE			8	880			8	880									1760
-TAR WASTE PHYSICAL	100	SAMPLE							3	300									300
LABORATORY-WATERS																			
-PRIORITY POLUT.	900	SAMPLE											8	7200					7200
-PNA'S	190	SAMPLE											45	8550					8550
SUB-TOTAL LABORATORY						5080		1440		10300				15750					32570
SUB-TOTAL EXTERNAL COST(1)						8558		2376		59186		5973		21439				495	98027
INTERNAL COSTS																			
WORD PROCESSING	12	HOUR	3	36											40	480	12	144	660
COMPUTER	1	$													1000	1000	200	200	1200
INST. RENTAL	1	$							600	600			120	120					720
REPRODUCTION	1	$	10	10											600	600	200	200	810
				46		8558		2376		59786		5973		21559		2080		1039	101417

(1) INCLUDES 10% HANDLING FEE

Koppers021621

NORTH DOANE'S LAKE SITE INVESTIGATION
PRELIMINARY COST ESTIMATE

LABOR COST ESTIMATE

PERSONNEL CATAGORY	AVE RATE $/HOUR	TASK 1 HEALTH & SAFETY PLAN PREP HOURS	TASK 1 LABOR $	TASK 2 SURFACE SOIL SAMPLING HOURS	TASK 2 LABOR $	TASK 3 SEDIMENT SAMPLING HOURS	TASK 3 LABOR $	TASK 4 DRILLING, SUB-SURFACE SAMPLING & WELL INSTALLATION HOURS	TASK 4 LABOR $	TASK 5 ON-SITE UV-SPECTROPHOTOMETRIC ANALYSIS HOURS	TASK 5 LABOR $	TASK 6 GROUND/SURFACE WATER SAMPLING HOURS	TASK 6 LABOR $	TASK 7 SITE INVESTIGATION REPORT HOURS	TASK 7 LABOR $	TASK 8 PROJECT MANAGEMENT HOURS	TASK 8 LABOR $	TOTAL ESTIMATED COST (LABOR) HOURS	TOTAL LABOR $
PROJECT MANAGER	99													12	1188	16	1584	28	2772
SENIOR HYDRO/GEO.	66													24	1584	60	3960	84	5544
SENIOR GEOCHEMIST	100													12	1200	12	1200	24	2400
ON-SITE COORDINATOR	56			16	896	8	448	110	6160			40	2240	50	2800			224	12544
LEAD SAMPLER/GEOL.	45			50	2250	10	450	127	5715			109	4905	60	2700			356	16020
JUNIOR SCIENTIST	36			60	2160	12	432	94	3384			50	1800	40	1440			256	9216
HEALTH & SAFETY OFFICER	39	16	624															16	624
TOXICOLOGIST	48													40	1920			40	1920
ANALYTICAL CHEMIST	38									180	6840							180	6840
CLERICAL	28	3	84											40	1120	24	672	67	1876
DRAFTING	33													35	1155			35	1155
LABOR SUB-TOTALS		19	708	126	5306	30	1330	331	15259	180	6840	199	8945	313	15107	112	7416	1310	60911

Koppers021622

7/30/87 DOANE LAKE STUDY

Tom Miller - not on scope of RI/FS as requested
Mike Smith - not intended - no evidence of pathway -
goal is to define if there is problem

M - other contam. other than PNA's
S - others are assoc. w/ gas operations
M - other pathways?
S - near surface soils, part
S - screen head space for voc's
M - surface water may be source of chloro
M - Wacker - insufficient ~~of~~ invest.
S - look @ fill mat'l
M. Endangerment Assess - scope; Data Validation
M. CN
D - not independent
S - groundwater well be better indication
M - 9 wells on shallow fill - 5 in sand aquifer
do 4 from each aquifer
M. ~~use~~ NL study
R. what do we want from DEQ
D - Starting point - still need to do H+Safety, QA/QC
M - ~~ott~~ other contam. VOA, Metals,
- need to look
S - provide add info; then if approved - go to full plan
2.2.2 expand Koppers history
Chlo - Rhone Poulenc is involved, but
probably not significant

CHP - not sure, but my read same
R - need to look further than just PNA's to look @ entire site

1-30-87

NORTH DOANES LAKE

SANDRA HART	N. W. Nat'l Gas.
Richard D. Bach	STOEL RIVES BOLEY (NW Nat Gas)
SAM RUTHERMEL	DEQ
BILL RENFROE	DEQ 229-5373
JORDAN DERN - KEYSTONE ENV. RES. Representing Koppers 412-227-2207	
Michael J. Smith Camp Dresser & McKee 303-458-1311	
Tom Miller	DEQ, Remedial Action 229-5082
JOHN PITTMAN	WACKER SILTRONIC
Ed Bolin	NWNG.
Doug Yocom	NWNG

COMMENTS

on

NORTHERN DOANE'S LAKE WORK PLAN

July 30, 1987

Prepared by: Oregon Department of Environmental Quality
Remedial Action Section

Prepared for: Northwest Natural Gas Co.,
Wacker-Siltronics Co., and
Koppers Co.

INTRODUCTION

Based upon data on file with the Oregon Department of Environmental Quality (DEQ), the DEQ requested North West Natural Gas Company, Wacker-Siltronics, and Koppers to perform a detailed investigation at the Northern Doanes Lake Site and perform an assessment of the possible need for remedial action. Specifics of the request were outlined in written communication from the Director of DEQ (letter from Fred Hansen to Jim D'Sorbo, Wacker-Siltronics, 8/11/86) and from DEQ RCRA program Hydrologist (letter from Neil Mullane to E.L. Bolin, Northwest Natural Gas Company, 8/15/86). A copy of the letters are attached. Basically the request, to the companys, was to prepare and submit a detailed Work Plan for a site characterization and assessment, using EPA Remedial Investigation/Feasibility Study guidance, as well as other applicable RCRA and CERCLA/SARA guidance documents.

Northwest Natural Gas Company, Wacker-Siltronics, and Koppers submitted a Work Plan. The plan consists of a brief discussion of the site history, a conceptual plan for limited site investigations and a proposal to feed the data from the investigation into an Endangerment Assessment.

The work plan does not respond to the Department's request as outlined in the letters and therefore can only be deemed deficient. The following is a section by section summary of our noticed deficiencies.

SECTION BY SECTION COMMENTS

SECTION 1.0 INTRODUCTION

The last sentence of paragraph 1 is not correct. As noted above, the DEQ asked for more than a "site assessment".

Paragraph 2 defines this document as a work plan. This document is more like an outline for a conceptual work plan. A typical work plan for site investigations should contain detailed protocols and plans deliniating their specific scope and schedules. (This subject will be discussed more specifically in further sections).

SECTION 2.0 EXISTING SITE CONDITION SUMMARY

2.1 SITE DESCRIPTION

2.1.1 SITE LOCATION

No comments this sub-section.

Koppers021627

2.1.2 SITE HISTORY

No comments this sub-section.

2.1.3 ENVIRONMENTAL SETTING

A draft RI/FS report for the Gould/NL superfund site, which neighbors the property in question, is available as source for more information on the general site and regional environmental setting. The report offers more up to date data than presented in this section.

The plan copies recieved by DEQ, are missing Figure sheet no. 2-4 and have two Figure sheet no's 2-3.

2.2 CONTAMINATION PROBLEM DEFINITION

The section states, "The primary facility of concern for purposes of this work plan document is the oil gasification plant due to its size and waste handling practices".

This may turn out to be true, however all study area facilities, past and present, must be part of the investigative scope until enough valid data is demonstrated to support the study objectives.

2.2.1 GASCO FACILITY, PORTLAND GAS AND COKE COMPANY

No comments this sub-section.

2.2.2 KOPPERS FACILITY

Is there more information on specific feedstock compounds as well as products or other chemical uses, storage or disposal?

2.2.3 WACKER-SILTRONICS FACILITY

No comments this sub-section.

2.2.4 ADJACENT SITES

No data was submitted for ground water flow direction or speed. Therefore it is premature to suggest gradient direction. The neighboring facilities also include Liquid Air Corporation's Acetylene Plant, ESCO Corporations Landfill, American Steel's warehouse, and Shell Oil Company Willbridge Plant.

2.3 POTENTIAL CONTAMINANTS

The work plans recieved by DEQ are missing Table 2-3.

On page 2-34, second paragraph, it is stated, "The presence of chlorinated phenols and the herbicides suggest contamination is

migrating into the study area via a ground water pathway from the industrial area immediately upgradient". I disagree with this conclusion. None of the ground water data provided shows presence of chlorinated phenolics. Also no ground water flow or direction data was submitted to suggest gradient. Soils and sub-surface soil data suggest contamination with chlorinated phenolics, among other things.
The background data provided in the plan does not discuss the history of Doanes Lake as it relates to the study area and the region. The above mentioned RI/FS report provides a great deal of information on Doanes Lake. It is possible that some soil contaminants found on the Wacker-Siltronics site were deposited via a surface route.
Rhone-Poulenc discharged chorinated phenolic contaminated waste water into Doanes Lake, which at one time encompassed the northern area now owned by Wacker-Siltronics.

2.4 CONTAMINANT CHARACTERISTICS

It is important to note that a lot more chemical compounds were found as contaminants in the various media. For purpose of this investigation all contaminants found in concentrations above background should be considered candidate compounds for the study. The Priority Pollutant list is a good starting point.

2.5 MIGRATION PATHWAYS

At this time, it is premature to eliminate any potential pathway.

SECTION 3.0 SITE CHARACTERIZATION PLAN

The major deficiencies are in this section.

The section outlines a conceptual and qualitative site characterization. The introduction to the section defines the object of the investigation as a qualitative confirmation of expected contaminants, skewing its focus only on waste products associated with the former Portland Gas and Coke facility. Also it states the objective of the study is to utilize the data from the site characterization to perform an endangerment assessment.

The DEQ requested and expected to recieve a detailed work plan to perform a site characterization, a site assessment, a review of potential remedial alternatives as appropiate and required, and to develop these plans in accordance with EPA guidance documents. We requested guidance to include RCRA, CERCLA/SARA, and specifically Remedial Investigation and Feasibility Study guidance as set forth by EPA.

An endangerment assessment for the Doanes Lake Study Area, if performed in accordance with EPA guidance (i.e. EPA's Endangerment Assessment Handbook and other applicable EPA Health/Risk Assessment guidance), would address DEQ's concerns associated with the subject study area only after supportive data is generated from a validated site characterization, a site assessment, and a review of potential remedial alternatives. We concur that an endangerment assessment would make a good end product for this study.

3.1 ANALYSIS OF SAMPLES

We diagree with the scope and focus of the analytical approach. The focus is on PNA's and skews any further investigative efforts towards locations screened on hits for PNA's. We agree that this approach may be more cost effective, but certainly not "more accurate", as stated. Other hazardous substances, pollutants, or contaminants were identified, other than PNA's, in the various media. (see Tables 2-3 and 2-4 as well as DEQ records of past sampling and analysis in the study area). Screening on the basis of PNA's skews the investigation. How will they obtain representative characterization of the study area for hazardous substances, pollutants, and contaminants?

Before the Department can concur with the plan we must concur with detailed sampling and analysis plans, quality assurance/quality control plans, health and safety plans, and well construction and testing protocols.

We agree that screening can be a helpful tool as a first phase towards focusing site characterization. How will they protect against skewing?

What type of UV fluoresence spectrophotometer instrument will be used in the proposed screening? Will it be a grating or filter instrument? What will the PNA's be standardized on in the reporting as total PNA's, what is the standard? Is the quoted 10 mg/Kg total PNA's adequate data for an endangerment assessment? What are the Data Quality Objectives of the study? What are the criteria to be used in the screening process? What are the quality assurance and quality control procedures?

SW 846 procedures need to be used throughout the sampling and analysis. A "clean-up procedure" was proposed for oily samples. What are the specifics and what assurances do we have that the results are not bias? We suggest use of EPA approved Contract Lab Program protocols and QA/QC procedures as well as a 10% split to a second QA lab, EPA Contract Lab Program approved .

3.2 SURFACE SOIL CHARACTERIZATION

The section is not specific or detailed enough. Sampling and analysis plans, health and safety plans and quality assurance/quality control plans need to be developed in detail.

Koppers021630

Also selection criteria needs to be developed, showing how representative site characterization will be performed. What are the data quality objectives?

We diagree with screening for PNA's for reasons given before.

Screening for certain Priority Pollutant fractions in representative locations, for all media throughout the entire study area, may be a more appropriate approach.

3.3 SUBSURFACE SOIL CHARACTERIZATION

The same general comments in section 3.2 apply to this section as well. Also, data suggests that contamination is present in the upper aquifer. Therfore an assessment needs to be performed on the next lower aquifer. We ask that you also to refer to the outline prepared by Neil Mullane, enclosed in the attached letter, for some of the other issues that need to be addressed. The proposed boring locations do not adequately characterize the entire study area. Based on data obtained in the CH2M report for the western portion of Wacker-Siltronics properties, more subsurface data is needed from that area on east to the river. Also the area on the northwestern portion of the study area should be investigated.

What are their plans to determine background soil and subsurface soil characterization?

3.4 RIVER SEDIMENT CHARACTERIZATION

The same general comments in sections 3.2 and 3.3 apply here also.

3.5 GROUND WATER CHARACTERIZATION

The same general comments in sections 3.2, 3.3 apply here also.

Where is the supporting data for the first and last sentence of the first paragraph in the section?

What is the citeria for selecting four wells for selected Priority Pollutant screening?

Where is the supporting data for the third sentence of the second paragraph of this section?

Since data suggests contamination is present in the upper aquifer, the next lower aquifer must be assessed.

What are the proposed well construction specifications and protocols for installation?

Refer to the attached letters for ground water issues to be addressed as well as EPA guidance documents.

As mentioned in the above section comments, we feel the number and location of the proposed wells are inadequate to fully characterize the study area.

3.6 SURFACE WATER CHARACTERIZATION

The same general comments in sections 3.2, 3.3, 3.4, and 3.5 apply here also.

3.7 REPORTING

We diagree with the last sentence of this section for reasons discussed in some detail above.

What is the schedule for development of a detailed work plan. Who will the contractors and subcontractors be and are they qualified to perform the work?

What are the deliverables?

We would like to see monthly status reports, not only on the performance of the work but also in the development of the plans.

What is the proposed scope of the endangerment assessment?

Arrangements need to be made for a DEQ representative to participate/observe in all field and laboratory procedures.

Koppers021632

VICTOR ATIYEH
Governor

Department of Environmental Quality

522 S.W. FIFTH AVENUE, BOX 1760, PORTLAND, OREGON 97207 PHONE: (503) 229-5696

August 15, 1986

Mr. E.L. Bolin, Manager
Land and Claims Department
Northwest Natural Gas Company
220 N.W. Second Avenue
Portland, OR 97209

?? 3540

Dear Mr. Bolin:

The Department is very encouraged by the activities and interest expressed by the parties involved in the Northern Doane's Lake investigation meeting held on July 28, 1986. There was a very good exchange of views and ideas on what is generally needed in this study and the questions the Department would like to see addressed. The Department looks forward to working with the companies involved in this study and we await the opportunity to review a detailed study outline from your consultant.

Attached for your information are two items; a summary of the July 28th meeting amd a general outline of the key study elements and questions which should be addressed in the detailed workplan.

I hope you will find this useful and that you will pass it on to your consultant. If you have any questions, please give me a call at 229-6242.

Sincerely,

Neil Mullane

Neil Mullane
Hydrologist
Hazardous and Solid Waste Division

NM:b
ZB5929
Enclosures
cc: Dick Bach, Stoel, Rives, Boley, Fraser and Wyse
Jim Ellis, Wacker Siltronics
John Pittman, Wacker Siltronics
Larry Patterson, Water Quality Division, DEQ
Janet Gillaspie, Northwest Region, DEQ
Chuck Clinton, Northwest Region, DEQ
Rick Gates, Laboratory, DEQ

#23

Attachment A

NORTHERN DOANE'S LAKE INVESTIGATION
General Study Needs

I. Site Characterization

A. Geology

1. Describe site soils and geology

2. Utilize such things as borehole logs, soil cores, soil classification, strategraphic cross sections, etc. when developing and displaying this information.

3. Questions which should be addressed.

a. What type of soils are present on site?

b. What geologic strata are beneath the site?

c. What are the physical characteristics of the soils and geology?

B. Hydrology

1. Describe site groundwater. This should include a determination of groundwater flow rate and direction in both the horizontal and vertical direction for the uppermost aquifer and any aquifers hydraulically interconnected with it beneath the site.

2. Utilize such things as water level measurements, slug tests, pump tests, etc. when developing the necessary information.

3. Questions which should be addressed.

a. What is the uppermost aquifer?

b. How extensive is the uppermost aquifer beneath the site?

c. What are the current uses of the aquifer?

d. Is the uppermost aquifer hydraulically interconnected with other aquifers?

e. If there is interconnection, what are the current uses of the connected aquifers?

f. What are the horizontal and vertical gradients of the uppermost aquifer?

C. Site History

1. Describe site history, this should include a discussion of what the site has been used for, what were the past waste disposal practices and locations, and any additional past information which may help identify possible contamination sources.

2. Utilize such things as aerial photographs, soil survey maps, employee interviews, etc. when preparing this description.

II. Site Assessment

A. Site Soils and River Sediments

1. Examine site soils and river sediments for possible contamination. If contamination is present, what are the concentrations and how extensive is the problem?

2. Utilize the U.S. Environmental Protection Agency publication "Testing Methods for Evaluating Solid Waste" (SW-846) when designing and conducting these analyses.

3. Questions which should be addressed

   a. What specific area(s) is contaminated on Wacker Siltronics, Northwest Natural Gas Company, and Koppers property?

   b. What is the source(s) of this contamination?

   c. What are the contaminant concentration levels?

   d. What volume of soil is contaminated?

   e. How widespread is the river sediment contamination?

   f. Is water quality at risk in the river?

   g. What impact does the sediment contamination have on aquatic organisms in the river?

   h. Is river sediment contamination due to groundwater seepage, tar movement in the soil, past overland movement of tar to the river, or past tar disposal in the river?

   i. Will there be changes in the sediment contamination levels over time? Will they increase or decrease?

j. Have the contaminants most likely migrated through the soil, or were they originally spread over the land surface with fill material placed over the contaminants?

k. What is the likely fate of the soil and/or sediment contaminants on each property?

B. Ground and Surface Water

1. Assess the ground and surface water and determine if contamination is present and in what concentrations. If a contaminant plume(s) exists, describe the plume's location flow rate, direction, and contaminant concentration.

2. Utilize such guidance references as the U.S. Environmental Protection Agency publication "Technical Enforcement Guidance Document" August 1985 or similar RCRA or Superfund guidance manuals when designing, installing, and utilizing the groundwater monitoring network.

3. Questions which should be addressed.

   a. What contaminants are in the groundwater beneath Wacker Siltronics, Northwest Natural Gas, and Koppers property?

   b. How widespread is the contamination?

   c. What is the source(s) of the contamination?

   d. If the uppermost aquifer is hydraulically interconnected with the Basalt Aquifer, is the Basalt Aquifer at risk?

   e. Are the contaminants moving towards the Willamette River?

   f. What impact does contaminated groundwater discharging to the Willamette River have on river water quality?

III. Compounds of Interest

A. PAHs (EPA Method 610)

1)	Naphthalene	6)	Anthracene
2)	Acenaphthylene	7)	Fluroanthene
3)	Acenaphthene	8)	Pyrene
4)	Fluorene	9)	1,2 - Benzanthracene/chrysene
5)	Phenanthrene	10)	Benzo pyrene

B. Lead

C. 2,4-D

D. 2,4 - Dichlorophenol

E. Benzene

F. Toluene

IV. Remedial Action

A. Possible Need for Remedial Action

1. Evaluate the need for remedial action. This should include an examination of contaminant concentrations, direction of movement, rate of movement, exposure routes, etc. and the possible risks to the public and the environment.

2. Questions which should be addressed

a. Is remedial action necessary to protect human health and the environment?

b. What are the possible exposure routes, i.e., dermal, inhalation, oral?

c. What is the potential for site contaminants to enter these exposure routes? Will this potential increase or decrease over time?

B. Alternative Remedial Actions

1. Consider the potential alternative remedial actions for each contaminant. The alternatives should examine among other approaches whether to leave contaminants in place or remove them or a combination of these, or different treatment techniques.

2. Questions which should be addressed.

a. Should contaminated soils be removed or left in place?

b. Should contaminated groundwater be treated?

c. Should the tars be removed or left in place?

d. Should the contaminated sediment be removed or left in place?

e. What treatment techniques are available for the contaminated groundwater?

f. Should a slurry trench be built around the pit?

g. Should the site be posted to warn of contamination?

h. Should the river sediments be posted to warn of contamination?

C. Remedial Action Selection and Implementation Schedule.

1. Select the most appropriate remedial action.

2. Establish an implementation schedule.

Additional Item:

Although this site is not currently considered either a RCRA or Superfund site, these programs have considerable guidance material for conducting site investigations and developing and selecting remedial actions, therefore, they should be utilized where appropriate.

Koppers021638

Neil

VICTOR ATIYEH
Governor

Department of Environmental Quality

522 S.W. FIFTH AVENUE, BOX 1760, PORTLAND, OREGON 97207 PHONE: (503) 229-5696

August 11, 1986

Jim D'Sorbo
Wacker Siltronics
P.O. Box 03180
Portland, OR 97230

Dear Jim:

I wanted to follow up our June meeting and my follow-up letter to you. We have received a letter from Northwest Natural Gas' attorney which describes the voluntary study which will be undertaken in the Northern Doane's Lake area to assess any possible environmental concerns in the area. I have enclosed a copy for your information, in case you did not receive one directly. We are very encouraged by this, and believe that this voluntary area-wide approach will get the information needed by all parties in the best, and most cost-effective manner.

In addition, I wanted to mention that Neil Mullane of our Hazardous and Solid Waste Division has not heard from John Pittman of your staff. In reflecting on our earlier conversation, you appeared eager to explore the possibility of accommodating Wacker's expansion plans while investigating the other pollution issues in the area. Please ask John to call Neil at 229-6242 to set a time to explore this issue.

Should you have any additional questions or concerns, please contact me at 229-5300.

Sincerely,

Fred

Fred Hansen
Director

FH:y
RY3096
Enclosure
cc: Hazardous and Solid Waste Division, DEQ
Northwest Region, DEQ

#22

STATE OF OREGON

DEPARTMENT OF ENVIRONMENTAL QUALITY INTEROFFICE MEMO

TO: Doane Lake File DATE: August 6, 1986

FROM: Neil Mullane

SUBJECT: Northern Doane Lake Investigation Strategy

The Department is concerned about potential ground and surface water contamination in the Northern Doane Lake area. The area is occupied by three companies; Wacker Siltronic, , Koppers and Northwest Natural Gas. In the past, Wacker Siltronic has installed a series of monitoring wells and has discovered contamination which included, polynuclear aromatic hydrocarbons, (PAH's). The Department would like to have the three companies undertake a site investigation that would:

1. Characterize the site geology and hydrology
2. Describe site history and possible contamination sources
3. Assess the contamination threat
4. Evaluate the environmental risk
5. Propose appropriate remedial actions
6. Implement a remedial action plan.

The initial strategy is to work with the three companies to have this study conducted jointly. This would probably be to the advantage to all parties involved. The investigation should attempt to integrate all previous on and off site investigations into a report, conduct additional site characterization and assessment information, identify and evaluate remedial actions and implement the preferred remeddial action. The study should have a strong characterization/ assessment phase and remedial action development/selection phase.

The Department will assist the investigation by coordinating DEQ regulatory requirements and program reviews of the work completed.

There are three major program areas involved in the study: 1) RCRA, 2) Superfund, and 3) Water Quality. The Northwest Region, Water Quality, Hazardous and Solid Waste and Laboratory staff are involved in the review of the study proposal and conclusions.

It appears that the State RCRA program would address the currently suspected problems as past practices. Since the Department does not have authority to implement the RCRA past practice program, described in the 1984 HSWA amendments, the direction from this program is to have the companies consult the existing national RCRA PA/SI guidance material to review what the primary study elements are in this guidance. The investigation should attempt to address the elements as appropriate. The companies should also be aware of the RCRA closure requirements. The investigation assessment phase should utilize SW 846 in designing and conducting the sample collection and analysis program.

The State Superfund program is just now being developed but the type of

#21

investigation anticipated at the Northwest Doane Lake site fits into this program's approach. Therefore, the investigation should be conducted with an eye towards addressing the superfund program requirements. The Superfund PA/SI amd RI/FS approach is very similar to RCRA's. The major difference is in the remedial action evaluation and selection where environmental risk and economics are considered in selecting the final remedial action. The companies should be advised to review these guidance materials.

The State Water Quality program at the present time probably has the most experience addressing situations similar to the Northern Doane Lake problem, particularly with its work in the Southern Doane Lake area and the general groundwater policy guiding its action. This has given the Water Quality program some experience in addressing problems in a manner similar to superfund but without the strict cleanup requirements of RCRA. The Water Quality program approach is to have a well defined site assessment and extensive remedial action develop process. However, very little program guidance is available for facilities to utilize when conducting these studies. Therefore, the RCRA and Superfund material can be very useful.

In the final analysis the companies should be encourage to conduct an investigation that addresses PA/SI and RI/FS information needs identified in the RCRA/Superfund programs. They should be encouraged to consult the Superfund environmental risk assessment and economic approaches for developing and evaluating remedial actions. This should give us the strong site characterization and assessment phase and a thorough remedial action development and selection phase.

Attached is an outline of the primary area the companies should be able to address with the investigation and few specific questions which the Agency would like to see addressed.

NORTHERN DOANE'S LAKE INVESTIGATION
General Study Needs

I. Site Characterization

A. Geology

1. Describe site soils and geology

2. Utilize such things as borehole logs, soil cores, soil classification, strategraphic cross sections, etc. when developing and displaying this information.

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8) Pyrene
9) 1,2 - Benzanthracene/chrysene
10) Benzo pyrene

B. Lead

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NW-S-3

NORTHWEST NATURAL GAS COMPANY

220 N.W. SECOND AVENUE PORTLAND, OREGON 97209

(503) 226-4211

July 13, 1987

Mr. Jordan Dern
Koppers Company, Inc.
Environmental Services
436 Seventh Avenue
Pittsburgh PA 15219

Re: Northern Doane's Lake Investigation

Dear Jordan:

This will confirm our meeting with the Oregon D.E.Q. at 9:30 a.m. Thursday the 30th of July 1987.

We will gather in my office between 8:30 and 9:00 a.m., and go from there to the D.E.Q. offices on the 9th floor at 811 SW Sixth Avenue.

Sincerely,

E.L. Bolin, Manager
Land & Claims Department

ELB:f

RECEIVED

JUL 20 1987

Environmental Resources

NW · S-3

NORTHWEST NATURAL GAS COMPANY

220 N.W. SECOND AVENUE PORTLAND, OREGON 97209

(503) 226-4211

June 9, 1987

Mr. Jordan Dern
Koppers Company, Inc.
Environmental Services
436 Seventh Avenue
Pittsburgh PA 15219

Re: Northern Doane's Lake Investigation

Dear Mr. Dern:

Please exchange the pages marked "Final Draft" in your current CDM report with the enclosed replacements. I will let you know soon the date of our meeting with the Department of Environmental Quality.

Sincerely,

E.L. Bolin, Manager
Land & Claims Department

ELB:f
Enclosure

RECEIVED

JUN 15 1987

Environmental Resources

NORTH DOANE'S LAKE
SITE CHARACTERIZATION
WORK PLAN

JUNE 1987

Prepared by:
Camp Dresser & McKee Inc.
2300 15th Street, Suite 400
Denver, CO 80202

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Koppers021651

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Koppers021652

EXECUTIVE SUMMARY

The North Doane's Lake study area includes land areas potentially affected by plant operations and waste disposal activities conducted at the Portland Gas and Coke Company's manufactured gas facility that operated from 1913 to 1956. Current facilities in the area of concern include the Northwest Natural Gas Company LNG facility, the Wacker Siltronic semiconductor fabrication plant, Pacific Northern Oil petroleum product terminal and the Koppers Corporation creosote terminal.

Historic operation of the manufactured gas facility resulted in the deposition of large volumes of residual tar containing high concentrations of suspected carcinogenic polynuclear aromatic hydrocarbons. Other wastes disposed of on-site include spent oxide that was used for sulfur removal and may contain cyanide in small quantities.

A Work Plan identifying sampling plans for delineation of the potential presence and migration pathways for hazardous constituents into the human or natural environment is presented. This Work Plan includes screening level sampling of surface and subsurface soils, river and pond sediment, and surface and ground water sampling. Results of the investigations will be used to perform an endangerment assessment to determine if the waste on-site presents a hazard.

Koppers021653

1.0 INTRODUCTION

This summary of site conditions and Work Plan for characterization of the North Doane's Lake study area is presented based on concerns regarding contamination at the site related to operations and closure of the Portland Gas and Coke Company manufactured gas facility that operated on a portion of the site from 1913 to 1956. The State of Oregon, Department of Environmental Quality requested that the current owners conduct a site assessment to determine if a hazard is associated with contaminants present on-site.

This document addresses the site history relevant to the origin of contaminants at the site, summarizes available site data, and presents a Work Plan for characterization of the site for the purpose of identifying if a potential hazard is associated with the continued presence of contaminants at the site.

Koppers021654

2.0 EXISTING SITE CONDITION SUMMARY

2.1 SITE DESCRIPTION

2.1.1 SITE LOCATION

The location of the North Doane's Lake site is in the northwest part of Portland on the west bank of the Willamette River, northwest and downstream of the Northwest Portland industrial area. For the purposes of this study, the site includes land occupied by the former Portland Gas and Coke Company manufactured gas facility, the Northwest Natural Gas (NWNG) LNG facility; Pacific Northern Oil's petroleum terminal; the Koppers Company creosote terminal; and the Wacker Siltronic Corporation semiconductor manufacturing facility. Both Pacific Northern Oil and Koppers lease the property from NWNG. NWNG owns the northwestern part of the site and Wacker owns the southeastern part of the site. Figure 2-1 is a recent aerial photograph of the study area. Figure 2-2 identifies current day features within the study area for reference.

This study area is roughly triangular in shape, consisting of about 120 acres. The northeast boundary of the site is the Willamette River; the southeast boundary is the Burlington Northern (BN) Railroad berm along the approach to the BN Railroad Bridge; the southwest boundary is the main BN Railroad track adjacent to N.W. St. Helens Road; and the northwest boundary is the property line between NWNG property and the U.S. Army Corps of Engineers Moorings facility, which is southeast of the St. John's Bridge. The site is about 6 miles upstream of confluence of the the Willamette River with the Columbia River.

2.1.2 SITE HISTORY

This section discusses history of the site to the present. Much of the information was obtained from a site history prepared for Walker Siltronic

Koppers021655

3.0 SITE CHARACTERIZATION PLAN

The objective of this site characterization plan is to confirm the presence of expected contaminants and qualitatively assess their areal and vertical extent. Site data are also required in order to complete the analysis of transport pathways and to identify sensitive receptors for endangerment assessments. These analyses are focused on waste products associated with the former Portland Gas and Coke manufactured gas facility. The southeast portion of the study area has potentially been impacted by contamination known to exist upgradient in the Northwest Portland industrial area, however, since this contamination is not related to on-site activities, no additional investigations are proposed. This characterization is designed to determine if a significant risk to human populations or the environment is potentially present, rather than collecting data to support detailed remedial design. Sufficient data collection is planned for support of initial screening of remedial alternatives, including the no action alternative if necessary. In order to meet these objectives, investigation and sampling of surface and sub-surface soils, ground water, surface water and river sediments are proposed. Specific details of field and laboratory investigations will be addressed in a Sampling Plan and a Quality Assurance Plan to be prepared as the initial step in implementation of this site characterization plan. These plans will identify potentially relevant standards that may affect detection limits required to define contaminated areas.

3.1 ANALYSIS OF SAMPLES

Screening methods for PNA compounds using an on-site field laboratory will be implemented to allow sample results to guide the field sampling program. This will allow more accurate and cost-effective delineation of contamination on site. The primary contaminants of concern at the site are PNAs, thus a selective total PNA procedure will be used for field screening analysis. PNAs will be extracted from soil samples using acetonitrile and

NORTHWEST NATURAL GAS COMPANY

220 N.W. SECOND AVENUE PORTLAND, OREGON 97209

(503) 226-4211

March 30, 1987

Mr. Mark Urbassik
Koppers Company, Inc.
Environmental Services
Pittsburgh PA 15219

Re: Northern Doane's Lake Investigation

Dear Mark:

This is to advise you that a meeting has been set for Tuesday, April 14, at 9:00 a.m. to discuss the proposed Camp, Dresser & McKee work plan, with the aim of reaching agreement on a plan that we can take to the Oregon Department of Environmental Quality.

We will meet in the General Services Conference Room on the fourth floor of One Pacific Square. I look forward to seeing you.

Sincerely,

E.L. Bolin, Manager
Land & Claims Department

ELB:f

RECEIVED
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ENVIRONMENTAL RESOURCES

1W-3-3

file

KEYSTONE
ENVIRONMENTAL RESOURCES, INC.

Interoffice Correspondence

To	L. F. Flaherty	From	Jordan M.Dern
Location	K-1750	Location	K-1928
Subject	NWNG Site Investigation	Date	June 1, 1987

The attached drawings indicate the location of soil borings and groundwater monitoring wells. Depending on specific setting, one well and two soil samples may be taken fron the old spray field.

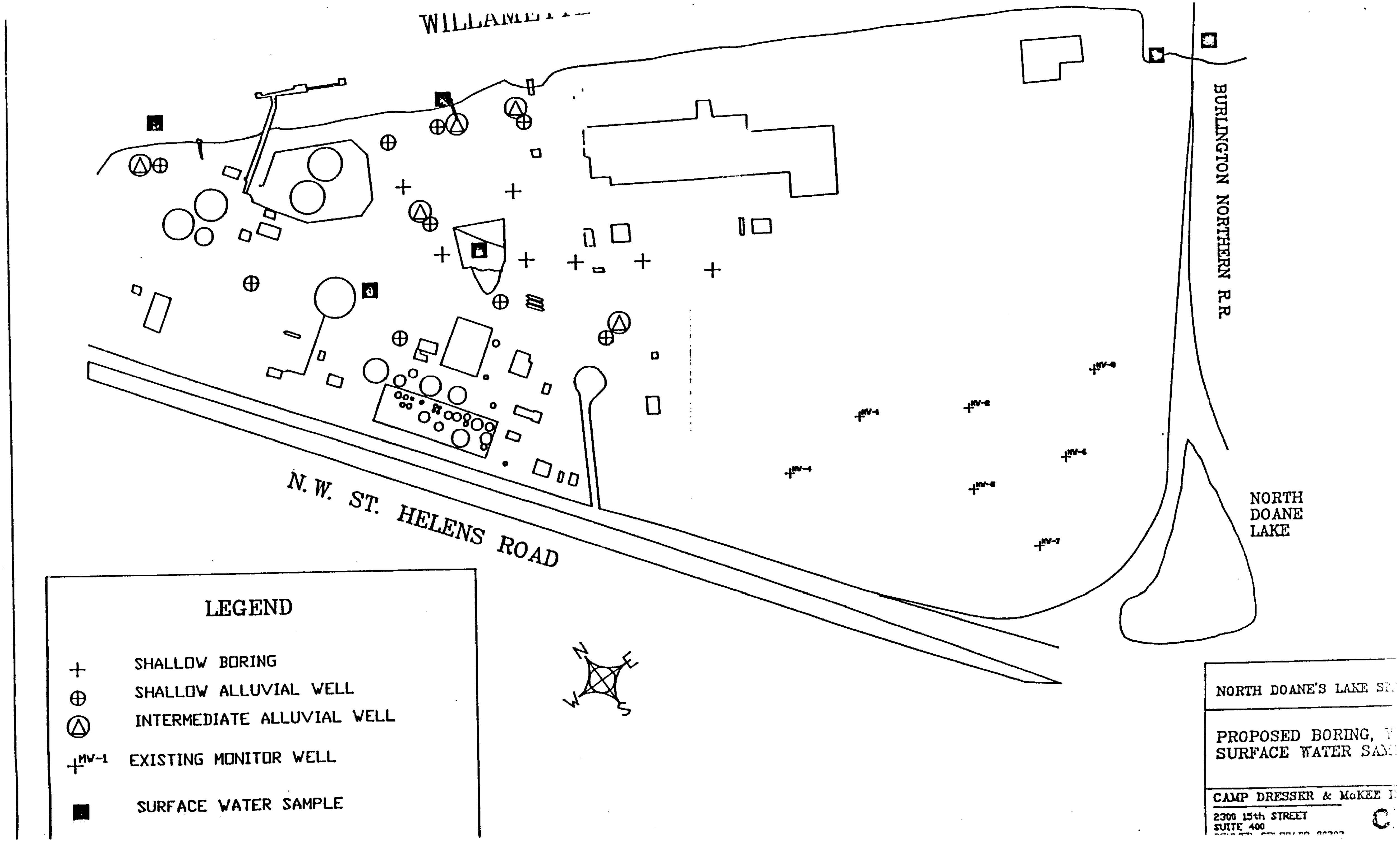
I have spoken with Ed Bolen of NWNG and indicated our overall agreement with the plan.

Jordan M. Dern

Enclosure

cc: J. Oxford   Northwest
M. Urbassik
T. Hays   - K-1400

Koppers021658



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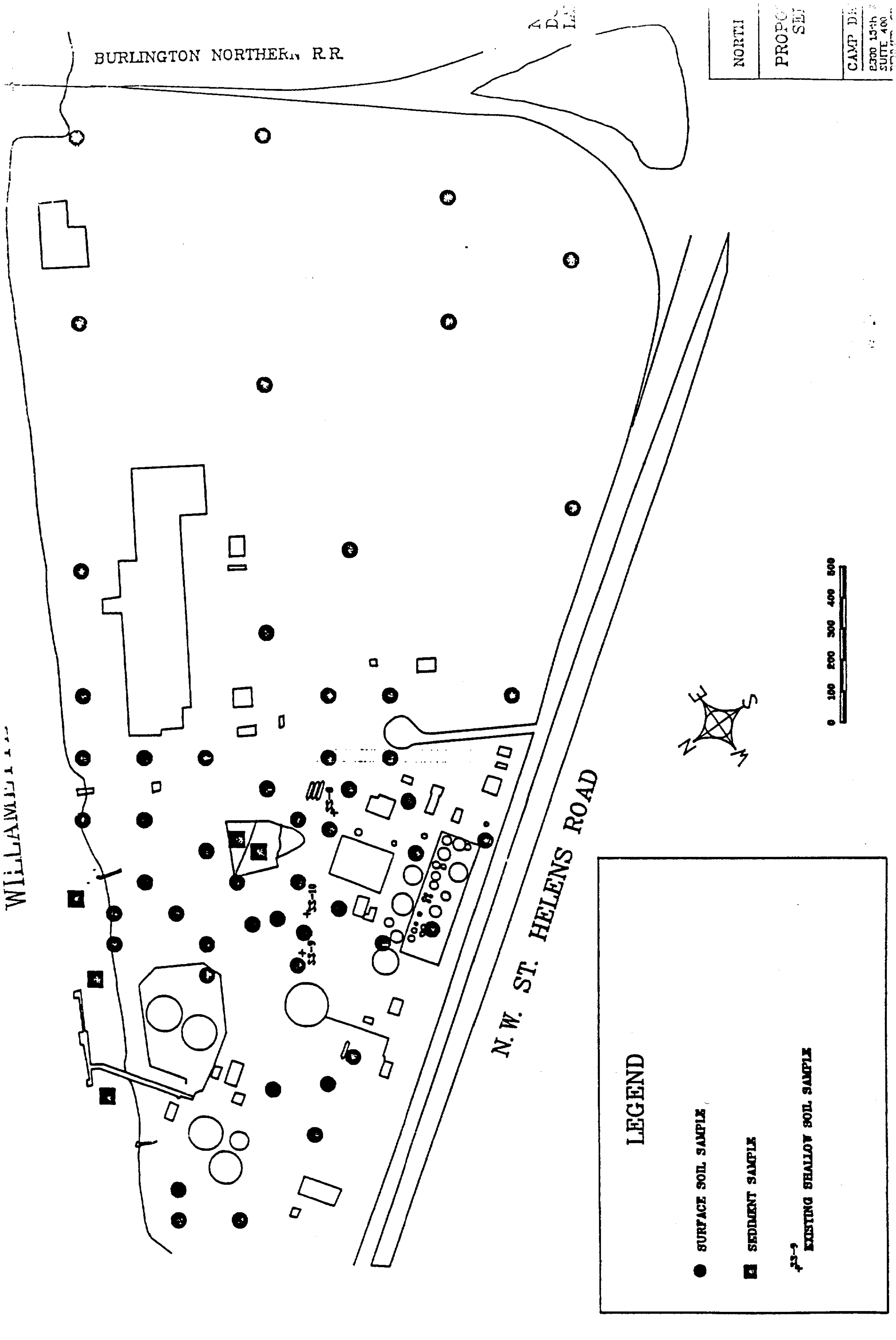
BURLINGTON NORTHERN R.R.
N.W. ST. HELENS ROAD
33-9
33-10
0 100 200 300 400 500
LEGEND
SURFACE SOIL SAMPLE
SEDIMENT SAMPLE
EXISTING SHALLOW SOIL SAMPLE

NW-S-3

TOOZE MARSHALL SHENKER HOLLOWAY & DUDEN

ATTORNEYS AT LAW
333 S. W. TAYLOR STREET
PORTLAND, OREGON 97204-2496

TELEPHONE (503) 223-5181
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L. GUY MARSHALL
ARDEN E. SHENKER
CHAS R. HOLLOWAY, III
PAUL R. DUDEN
STEPHEN R. FRANK
WM. G. SHERIDAN, JR.
MICHAEL J. GENTRY
NEALE E. CREAMER**
ROBERT GREENING**
ELIZABETH A. TRAINOR*
ERIC J. NEIMAN*
DAVID R. SIMON
MONTGOMERY W. COBB
JOSEPH C. FREEMAN
JAMES W. MOLLER

ROBERT M. KERR
COUNSEL

LAMAR TOOZE
1895-1971

LAMAR TOOZE, JR.
1922-1985

ADMITTED IN OREGON
WASHINGTON* AND
CALIFORNIA**

RECEIVED

APR 9 REC'D

ENVIRONMENTAL RESOURCES

April 6, 1987

By: FEDERAL EXPRESS

Mr. Thomas R. Hays
KOPPERS COMPANY
436 Seventh Avenue
Pittsburg, PA 15219

Re: Koppers/North Doane's Lake Investigation
Our File No. A0695/02675

Dear Tom:

We were retained to assist Koppers regarding the North Doane's Lake investigation and cleanup required by the DEQ. The area involved is about 150 acres and is next to a superfund site. Northwest Natural Gas Company, Wacker Siltronic Corporation and Koppers Company are the Companies involved.

For approximately 40 years NWNG dumped waste from its gas production plant. Since 1965 Koppers has leased about 5 acres from NWNG. For the first 5 years Koppers used a small area to deposit liquid waste from its creosote manufacturing operation. Wacker purchased about 80 acres from the Port of Portland. The property is located between the NWNG property and the superfund site. Wacker manufactures silicon chips and may have deposited waste.

In 1985 Wacker threatened Koppers with a lawsuit for costs and expenses associated with a study of its property by CH2M Hill. In early 1986 the DEQ invited the 3 companies to prepare a plan for investigation of the site, including the effect upon the ground water, upper and lower acquifers and bank and channel of the Willamette River adjacent to the site.

Camp, Dresser and McKee, Inc. was retained to prepare a plan to investigate the site. A draft plan has been prepared, but not submitted to the DEQ. The cost of preparation of the plan is about $25,000. The cost of the next phase is between $350,000 and $750,000. Because of the type and amount of waste material, the location of the superfund site, and the political climate in Oregon it is anticipated that a major cleanup will be required.

Koppers' involvement both in terms of size of operation and length of time on the site is very small. It is most unlikely that any specific pollutant will ever be traced to Koppers.

Initially the strategy was for NWNG to assume all expenses and liabilities of Koppers associated with the study and cleanup. In exchange Koppers would provide its expertise and not "rock the boat". At the same time it has been necessary that Koppers remain involved because of the potential litigation and adjustment of liability for the costs of the investigation and cleanup.

Koppers has been partially successful. Wacker is contributing one-third of the cost of the study. NWNG has agreed that Koppers need not share in the expense of the plan at this time. That decision is deferred. Koppers will be required to contribute only if it is later found there is a measurable amount of pollution attributable to Koppers. In the meantime Koppers is participating in preparation of the plan.

We were asked to contact former Koppers employees. We have contacted those we could reach. Attached are summaries of phone conversations. We talked to Mr. Rassi, but he was mad and bitter. He did not want to talk and stated that John Oxford had taken his job. He did indicate that NWNG has not talked to him. Under the circumstances I felt it was best not to press him further at that time. This should be done after the plan has been approved by the DEQ.

In addition we have collected what information we have been able to locate regarding the history of the Doane's Lake Region and DEQ investigation of the site.

I do not expect a final report from Camp, Dresser & McKee in 1987. Until the study is completed, I anticipate our involvement to be simply monitoring the development and implementation of the plan. We will attend meetings that Mark Urbassik or Larry Flaherty do not or cannot attend and it is appropriate that a Koppers' representative be present. The cost shall not exceed $5,000.

Upon completion of the study Koppers will be in a position to evaluate its level of financial participation, if any, and negotiate further with NWNG on this issue. My evaluation is that any financial participation shall be nominal to none. Our involvement will be to assist in negotiations with NWNG. I do not anticipate the expense to exceed $5,000.

MEMORANDUM TO FILE

FROM: JCF
DATE: 12/5/86
RE: Koppers Company
A0695/02675

Telephone Interview of Hugh W. Spry

Mr. Spry lives at 4446 S.E. Lexington, Portland, Oregon 97206. His telephone number is 775-6127.

On December 3, 1986, I interviewed Mr. Spry over the telephone. He says that he was with Koppers in their Portland plant from the inception. He is aware of no spills or dumping of any kind. Mr. Spry left his job in the late 1960's, approximately 1968.

At the time of his employment, Koppers was manufacturing creosote. Oils were run through the system. The creosote was placed into tank cars. The pitch went into big pitch pans. Mr. Spry says there may have been some inadvertent runover from the tanks down in the pits, but that this was a rare occurrence.

Spry said he was not aware of any dumping on behalf of Northwest Natural Gas. During the time that he was employed, Wacker was not yet on the site.

JCF:mg

MEMORANDUM TO FILE

FROM: JCF
DATE: 12/8/86
RE: Koppers Company
A0695/02675

Telephone Interview of Timothy K. Fisher

Mr. Fisher's address is 3546 N.E. 90th Avenue, Portland, Oregon 97220. He can be reached at 256-1620, or at work during the day at 253-3846.

Mr. Fisher worked for Koppers between 1964 and 1966 as a shop steward. He says at this time Koppers was dealing with the shipping of creosote, solvents and pitch. Wacker was just being built on the adjacent property.

Mr. Fisher is not aware of any intentional dumping. He says this type of thing just did not exist. He does note, however, that there were occasional spills from the railroad cars, which they would immediately clean-up. He also says that some of the tanks would occasionally overflow and lose a few gallons, but that this was cleaned up as quickly as possible.

The major point he makes which concerns me is that when he arrived there was a large pile of tar pitch, roofing pitch, and other miscellaneous items piled up near an old tank in what he described as a "pond." He says that he and some other men were given the job of moving the pile over near the Northwest Natural Gas property, and that since that date he has noticed that the pile has been permanently done away with.

Mr. Fisher states that while he was at Koppers' Portland plant, the plant was improving the grounds. That is, they were cleaning up the area and were constantly being tested by DEQ.

Mr. Fisher is an intelligent gentleman who went back to college in 1966, when he left his employment with Koppers. I feel that we need to be careful with him. I also feel we should investigate into exactly what this pond area which was cleaned up by him and others consisted of. In addition, we should determine exactly where this pond existed and where the pile was moved to near the Northwest Natural Gas property. I would also like to find out when the pile was eventually removed, and what became of the material.

JCF:mg

N W-J-3

KEYSTONE
ENVIRONMENTAL RESOURCES, INC.

RECEIVED

MAR 6 1987

Environmental Resources

Interoffice Correspondence

To	THOSE LISTED	From	M. Urbassik
Location		Location	K-1940
Subject	Northwest Terminal	Date	March 4, 1987

TO: L. Flaherty - K-17
J. Oxford - Northwest
T. Bourne - K-29
T. Hays - K-14
J. Dern - K-19
J. Batchelder - K-17
A. Middleton - Monroeville
C. Holloway - Portland, Oregon

On February 25, 1987, I received a copy of Camp, Dresser and McKee's draft work plan entitled "North Doane's Lake Site Characterization." I was able to review the draft on March 3, 1987. In general the proposed scope of work is very reasonable.

For soils at the surface across the site, a total of 72 sample locations were selected. Of those, 9 are associated with the Koppers-leased property, and at least 20 are associated with Wacker. The remainder are associated only with NWNG. All of the samples collected would be analyzed by a quick, inexpensive method to screen for Total Polynuclear Aromatic Hydrocarbons (PAHs). Seven or eight of the samples would be sent to a laboratory for detailed PAH analyses and three would be sent outside for total priority pollutant analyses.

For the subsurface at the site a total of 29-31 drilling locations are proposed. Of these locations, 12 have been selected for installation of groundwater monitoring wells. Six of the well locations have either 2 or 3 wells monitoring different depths. The boring program would generate an estimated 200 samples all of which would be screened for PAHs. An estimated 20 samples would be analyzed in detail for individual PAHs in a laboratory. An estimated 5 samples would be analyzed for priority pollutants. A total of one boring and no wells would be located on the Koppers-leased property.

All the wells on the property (including the existing Wacker wells) will be analyzed for individual PAHs. Twelve of the wells will have the total priority pollutant analyses performed. Additionally, twelve wells will be sampled quarterly for one year and analyzed for individual PAHs.

My thoughts on the proposed work plan are as follows:

1. It is very favorable to Koppers and should be approved. I'm not so sure that NWNG and Wacker will like it. NWNG gets most of the attention (justifiably so from a technical viewpoint).

2. The absence of wells on Koppers-leased property is good; however two of the proposed shallow monitoring wells are very close to the leased property and directly downgradient. I could be argued that these two would indicate to some extent Koppers involvement. It also can and should be argued otherwise, based upon the proposed work plan.

3. The draft work plan states that we ceased distillation operations in 1973. I thought it was before then. We should either confirm or correct this date!

4. The draft work plan goes into great detail on the past operations associated with the site. Pages and pages discuss NWNG's operations. A very short two paragraphs are dedicated to Koppers. It should be clear to anyone reading the work plan that NWNG is the primary contributor by orders of magnitude.

5. I think that the work plan is an acceptable one for submittal to the Oregon DEQ. I also believe that they will ask for a great deal more sampling and possibly more sampling locations. Only time will tell. We've (Keystone or other Koppers Comsultants) never submitted one where no revisions have been needed.

6. This is only the beginning.

I would like any comments as soon as possible. I think that I ought to get back to Ed Bolin with my comments soon.

Mark

Mark Urbassik

MU/s

KEYSTONE
ENVIRONMENTAL RESOURCES, INC.

NORTHWEST NATURAL GAS COMPANY

220 N.W. SECOND AVENUE PORTLAND, OREGON 97209

(503) 226-4211

February 24, 1987

RECEIVED
FEB 25 REC'D
ENVIRONMENTAL RESOURCES

Mr. Mark Urbassik
Koppers Company, Inc.
Environmental Services
Pittsburgh PA 15219

Dear Mark:

Enclosed is the draft work plan for the Northern Doane's Lake properties.

A meeting will be called in the near future to discuss this with Camp Dresser & McKee, and to work toward a final plan for presentation to the Oregon Department of Environmental Quality. Your participation in this effort will be appreciated.

Sincerely,

E.L. Bolin, Manager
Land & Claims Department

ELB:f
Enc.

NW-5-3

NORTHWEST NATURAL GAS COMPANY

220 N.W. SECOND AVENUE PORTLAND, OREGON 97209

(503) 226-4211

September 30, 1986

cc: T. Haus
C. Holloway
L. Flaherty
J. Dern
K. Caldwell
J. Batchelder

Mr. Mark Urbassik
Koppers Company, Inc.
Environmental Services
Pittsburgh PA 15219

Dear Mark:

Enclosed is a copy of a letter just received from Mike Smith of Camp, Dresser & McKee regarding our Northern Doane's Lake property investigation.

The letter outlines the scope of work felt to be required in phase 1 of the study, a time table suggested for this phase and an estimate of phase 1 costs.

Please let me know at an early date your reaction to the proposal and in particular to the estimated cost.

Sincerely,

E.L. Bolin, Manager
Land & Claims Department

ELB:f
Enclosure

RECEIVED
OCT 8 1986
Environmental Resources

RECEIVED
OCT 6 1986
ENVIRONMENTAL RESOURCES

CDM

environmental engineers, scientists, planners, & management consultants

CAMP DRESSER & McKEE INC.

Riverpoint
2300 15th Street, Suite 400
Denver, Colorado 80202
303 458 1311

September 23, 1986

Mr. E.L. Bolin, Manager
Land and Claims Department
Northwest Natural Gas Company
220 N.W. Second Avenue
Portland, Oregon 97209

Subject: Scope of Work for Preparation of the Work Plan, Phase 1, North Doane's Lake Investigation

Dear Mr. Bolin:

This letter presents Camp Dresser & McKee Inc.'s (CDM) scope of work for preparation of the detailed work plan for investigation at the North Doane's Lake site. This scope of work also includes a staffing plan, schedule, and cost estimate. We refer to this portion of the project, work plan preparation, as Phase 1. The ultimate goal of the project is to develop a final action for the site and receive Oregon Department of Environmental Quality (DEQ) concurrence.

<u>Scope of Work for Phase 1</u>

The primary goal of Phase 1 is preparation of the detailed work plan. Based upon our meetings to date, the important considerations for the work plan are (1) schedule, such that the work plan is completed and approved by the DEQ prior to the change in administration in January, (2) use of existing data and (3) responsiveness to guidance in the 8/15/86 letter from DEQ on study content as appropriate. To the maximum extent possible, we will emphasize use of existing data rather than field collection of new data (although some will be required). Issues that will be addressed in the work plan include the following:

- Impacts on aquatic ecology and sediments in the Willamette River using existing data from river studies and dredging records.

- Ground water characteristics particularly quality and contribution to surface water quality.

- Air quality impacts, particularly if near surface contamination is found.

The work plan will be prepared by collecting as much information as is available from existing sources and analysis of that data to determine what additional data is required. The work plan will address, where possible, the rationale for not undertaking requested studies, such as the determination of vertical gradients in the uppermost aquifer or field characterization of benthic organisms.

Task 1 - Project Initiation

A meeting was held on September 16, 1986 in Portland that served as the project initiation. The objective of the project and areas of concern were discussed. Project initiation also includes preparation of this letter which establishes the scope of work, schedule, staffing, and costs for Phase 1 of the project. The following items were received at the kick-off meeting:

1. Preliminary Report – Soil Investigation for the proposed polysilicon plant.

2. Ground water analyses from Wacker monitor wells.

3. Miscellaneous newspaper clippings relating to the area.

4. Wacker monitor well water level data and river stage data.

5. List of useful information sources from Wacker.

6. Current condition air photo blue-line.

7. Oblique air photo blue-line at peak of gas plant operation.

Task 2 - Preparation of the Work Plan

Preparation of the work plan is divided into several subtasks which are discussed below and shown in the schedule (Figure 1).

Subtask 2.1 - Collection of Information - The first step in preparation of the work plan is collection of available information that is pertinent to the site and adjacent areas. Some data was collected during the initiation meeting as listed above. We anticipate that most of the information will be obtained during a 2-day trip to Portland by two people. Information to be gathered will include:

1. Foundation reports with logs from both NWNG and Wacker.

2. Reports, historic photos and other materials from a past practice review conducted by another consultant for NWNG.

3. Information from the adjacent Superfund site.

4. Extensive information in the DEQ files. This will be the best source of information on the site.

5. Records of COE dredging activities in the area.

6. Plant engineering dravings available from NWNG.

7. Historic photographs of various plant facilities available in Mr. Bolin's office.

8. Interviews with plant employees about plant operations and the decommissioning (if deemed necessary, we will request scheduling of interviews in advance).

9. Site reconnaissance to identify significant features and allow sampling plans to be developed.

Subtask 2.2 - Preparation of Site Condition Summary - Following data collection, we will evaluate the information and prepare a summary of site conditions from the available information. This summary will provide the basis for preparation of the detailed work plan. A significant amount of literature is available on gas plants. This information along with the existing data base will be used to charaterize exposure pathways and compounds of concern in the work plan.

Subtask 2.3 - Preparation of Draft Work Plan - The information collected during Task 1 and Subtask 2.1 and evaluated in Subtask 2.2 will be used to prepare the draft work plan. Evaluation of existing information will allow us to design the investigation to maximize available data and use field data collection only where needed. Where applicable, cost effective screening techniques will be recommended to reduce the number of laboratory analyses. The work plan will be responsive to the extent appropriate to the outline prepared by DEQ in their letter of August 15, 1986. We will also use EPA guidance documents for conducting CERCLA RI/FS investigations to the extent applicable to this study. The work plan will include sections on the site conditions, preliminary assessment of remedial alternatives, project plans (e.g., health and safety, sampling and analysis, and QA/QC), and the scope of work for source and site characterization, contaminant pathways, and health evaluation. We anticipate preparation of 8 copies of the draft document.

Subtask 2.4 - Client Review and Meeting - Copies of the draft work plan will be submitted to NWNG, Koppers and Wacker for review. After your review, a meeting will be held in Portland to finalize the document prior to submitting it to DEQ.

Subtask 2.5 - Preparation of Final Draft Work Plan - CDM will then incorporate the comments made on the draft and discussed at the meeting. fifteen copies of the final draft work plan will be prepared and submitted to NWNG.

Subtask 2.6 - Agency Review and Meeting - Following submittal of the Final Draft Work Plan to the DEQ, we will schedule a meeting to discuss their comments. Personnel from CDM, NWNG and others, as appropriate, will attend the meeting. We plan to reach concurrence on the necessary elements in the Final Work Plan. All substantive contacts with the agencies will be cleared with your designated representative.

Subtask 2.7 - Preparation of Final Work Plan - Once the components of the work plan have been agreed to by the DEQ, we will incorporate the necessary changes. We will then produce 15 copies of the Final Work Plan. This document will set the stage for Phase 2 of the project.

Task 3 - Project Management

This task includes technical and financial project management for staffing, scheduling and schedule-tracking, cost-tracking and invoice preparation.

SCHEDULE

The proposed schedule for Phase 1 of the North Doane's Lake investigation is presented in Figure 1. As shown, preparation of the work plan will be completed by December 5, 1986. The schedule is tight and will depend in part upon timely review.

STAFFING

Mr. Michael J. Smith will serve as Project Manager. Mr. Smith is a senior hydrogeologist who has worked on numerous hazardous waste investigations, including managing a project for another utility for a similar plant in Astoria, Oregon. Ms. Patricia Fuller will be the Assistant Project Manager. Ms. Fuller is a senior scientist and regulatory specialist who has worked on numerous RCRA and CERCLA hazardous waste investigations and permitting projects. Dr. Roger L. Olsen, a senior geochemist, and Dr. John K. Hopkins, senior chemical engineer will serve as technical advisors and will contribute to work plan preparation. Mr. John Wondolleck, a senior scientist, will also contribute to the work plan. Ms. Patricia Billig, a toxicologist and aquatic biologist, will assist in preparation of the work plan and later stages of the project.

Other staff including Mr. Gary Shaughnessy, a geologist licensed in Oregon; Mr. Dave Chamberlin, a senior hydrogeologist; Ms. Karen Lewis, a health and safety specialist; Mr. Gordon McCurry, a hydrogeologist; Dr. Andrew Davis, a geochemist; Mr. Dave Boon, a soil chemist; and Mr. Mark Komp, an air quality specialist, may contribute to the work plan and will be involved in later stages of the project.

COST ESTIMATE

The cost estimate by task for Phase 1, of the North Doane's Lake investigation is presented in Tables 1, 2 and 3. Table 1 shows labor costs; Table 2 shows expenses; and Table 3 summarizes costs. Total cost is projected to be $25,280. The cost estimate is based on category rates. Invoicing will be based on actual rates plus 33% fringe benefits, 140% overhead and 10% fee on burdened labor. Expenses and other direct costs will be billed at actual cost plus 10% handling. Invoices will be submitted on a monthly basis. Invoices will include sufficient detail (dates, hours, rates) and supporting documentation in order that you may reasonably ascertain the basis for the charges. Terms are net plus 30 days.

OTHER CONSIDERATIONS

CDM will accept a standard-type of consulting contract with NWNG. All information provided by NWNG and prepared by CDM during the period of this contact will be regarded as confidential. As we have discussed, CDM will require a modification to the standard liability clause with regards to indemnification related to pollution exclusion. Appropriate paragraphs follow.

Notwithstanding anything to the contrary elsewhere in this proposal or contract with the exception of claims, losses, and expenss for which insurance is provied to Camp Dresser & McKee Inc. (CDM), Northwest Natural Gas Company (NWNG) shall indemnify, defend, and hold harmless CDM and its subcontractors, agents, and employees from and against all claims, damages, losses and expenses, direct and indirect, or consequential damages, including but not limited to fees and charges of attorneys and court and arbitration costs, arising out of or resulting from the performance of the work by CDM, or claims against CDM arising from the work of others and related to the dispersal, discharge, escape, release or saturation of smoke, vapors, soot, fumes, acids, alkalis, toxic chemicals, liquids, gases or any other material, irritant, contamination or pollutant in or into the atmosphere, or on, onto, upon, in or into the surface or subsurface (A) soil, (B) water or watercourses, (C) objects, or (D) any tangible or intangible matter, whether sudden or not.

Except in regard to claims involving hazardous waste elements of this agreement as specified above, CDM shall indemnify and hold NWNG harmless from and against all claims, damages, and losses arising out of CDM's negligent acts, errors, and omissions in the performance of professional services under this agreement. CDM shall maintain comprehensive general liability and automobile liability insurance coverage with minimum limits of liability of $1,000,000 each during the life of the contract.

We sincerely appreciate this opportunity to work with Northwest Natural Gas on the North Doane's Lake Investigation. Please call us if you have any questions on our proposed scope of work.

Very truly yours,

CAMP DRESSER & McKEE INC.

Michael J. Smith/jrc

Michael J. Smith
Project Manager

Patricia R. Fuller

Patricia R. Fuller
Assistant Project Manager

Approved:

Wayne T. Linley Sr. VP for

Richard J. Thornton
Vice President

MJS/PRF:dp

cc: PF 8455
FPC
PF 202

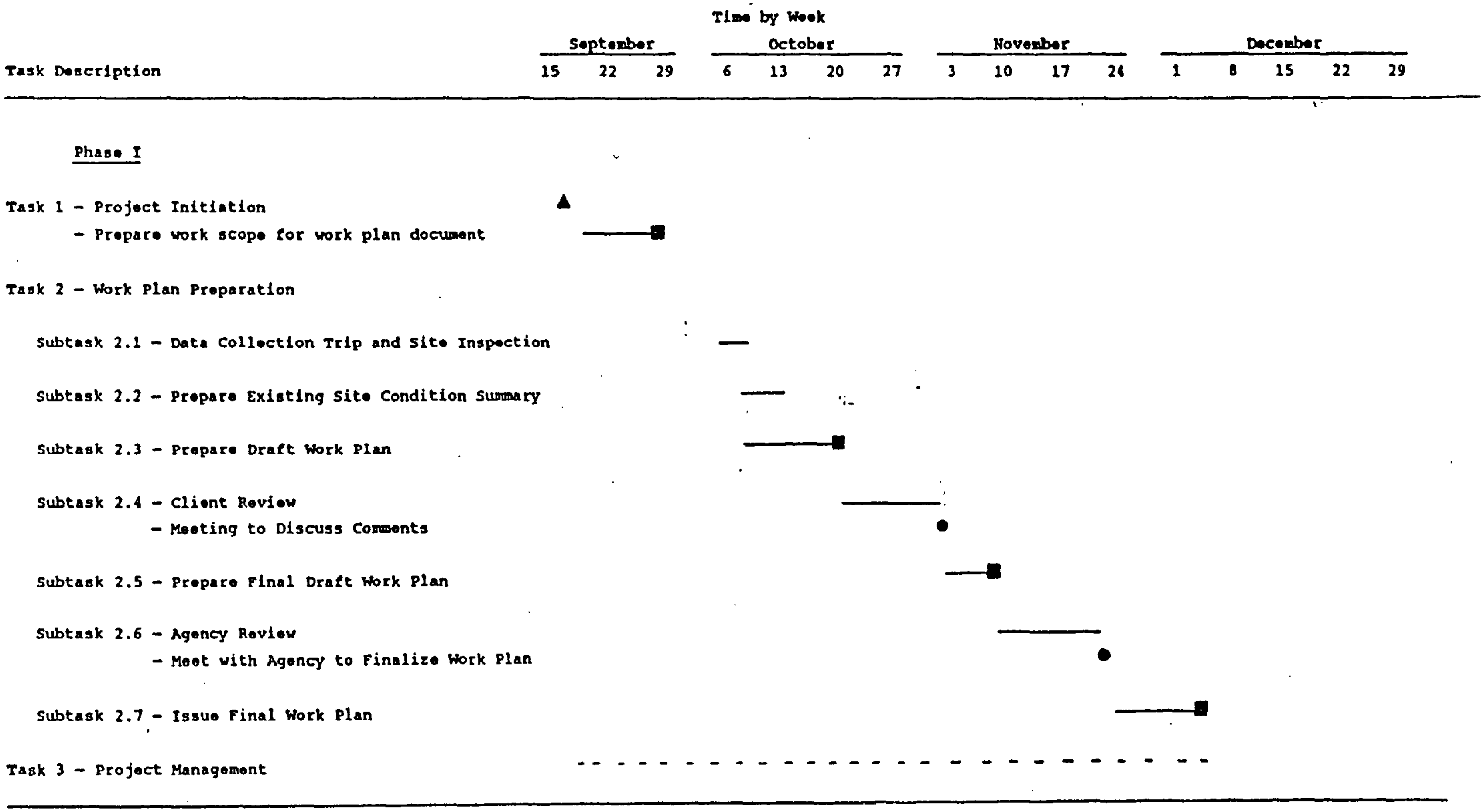

FIGURE 1

PROJECT SCHEDULE

NORTH DOANE'S LAKE INVESTIGATION

Koppers021675

TABLE 1

LABOR COST ESTIMATE

Hours by Personnel and Cost Per Hour

(Includes Fringe Benefit, Overhead and Fee)

Task	M.Smith R. Olsen $92	J. Hopkins D. Chamberlin $67	J. Wondolleck P. Fuller $60	P. Billig G. Shaugnessy A. Davis $50	G. McCurry D. Boon $40	K. Lewis $30	Secretary Word Proccessing $27	Drafting $30	Reproduction Clerk $24	TOTAL
1. Project Initiation	16		8				2			26
2.1 Data Collection			20		20		1			41
2.2 Site Condition	6	2	16	4	8		4			40
2.3 Draft Work Plan	14	6	24	8	8	8	20	20	6	114
2.4 Client Review and Meeting	12		12				2			26
2.5 Final Draft	2	2	8		4		8	4	6	30
2.6 Agency Review and Meeting	12		12				1			25
2.7 Final Work Plan	2	2	6		2		8	2	6	28
3.0 Project Management	4		10				8			22
TOTAL HOURS	68	12	116	12	42	8	54	26	18	352
TOTAL DOLLARS	$6,256	$804	$6,960	$600	$1,680	$240	$1,458	$780	$432	$19,210

Koppers021676

TABLE 2

EXPENSE COST ESTIMATE

Task	Air Travel	Per Diem	Car	Materials Copying	Telephone	Shipping	Computer Word Processing	TOTAL
1. Project Initiation	$320	80	60	10	10			480
2.1 Data Collection	640	320	120		20			1,100
2.2 Site Condition				20			20	40
2.3 Draft Work Plan				300	20	40	140	500
2.4 Client Review and Meeting	640	320	120		20			1,100
2.5 Final Draft				400	10	40	80	530
2.6 Agency Review and Meeting	640	320	120		20			1,100
2.7 Final Work Plan				400	10	40	80	530
3.0 Project Management				20	20	20	80	140
TOTAL HOURS	2,240	1,040	420	1,150	130	140	400	5,520

TABLE 3

TOTAL COST ESTIMATE

Labor	19,210
Expenses	5,520
10% Handling	550
TOTAL	$25,280

-W-5-3

KOPPERS

Cc: J Oxford-Portland
Sent 10/24/86

Interoffice Correspondence

To	See Below	From	Thomas R. Hays
Location	Various	Location	K-1400
Subject	Northwest Terminal Site	Date	September 8, 1986

To: Key Caldwell
Larry Flaherty
Mark Urbassik
Jorden Dern
Jim Batchelder

Attached is the most recent correspondence from N.W. Natural Gas concerning our Northwest Terminal Site. Key indicates that N.W. Gas will meet with CDM on Thursday.

Tom Hays
Thomas R. Hays

TRH:cjh

Attachment

RECEIVED
SEP 08 1986
Environmental Resources

K-5 REV. 2

VICTOR ATIYEH
Governor

Department of Environmental Quality

522 S.W. FIFTH AVENUE, BOX 1760, PORTLAND, OREGON 97207 PHONE: (503) 229-5696

August 15, 1986

Mr. E.L. Bolin, Manager
Land and Claims Department
Northwest Natural Gas Company
220 N.W. Second Avenue
Portland, OR 97209

Dear Mr. Bolin:

The Department is very encouraged by the activities and interest expressed by the parties involved in the Northern Doane's Lake investigation meeting held on July 28, 1986. There was a very good exchange of views and ideas on what is generally needed in this study and the questions the Department would like to see addressed. The Department looks forward to working with the companies involved in this study and we await the opportunity to review a detailed study outline from your consultant.

Attached for your information are two items; a summary of the July 28th meeting amd a general outline of the key study elements and questions which should be addressed in the detailed workplan.

I hope you will find this useful and that you will pass it on to your consultant. If you have any questions, please give me a call at 229-6242.

Sincerely,

Neil Mullane

Neil Mullane
Hydrologist
Hazardous and Solid Waste Division

NM:b
ZB5929
Enclosures
cc: Dick Bach, Stoel, Rives, Boley, Fraser and Wyse
Jim Ellis, Wacker Siltronics
John Pittman, Wacker Siltronics
Larry Patterson, Water Quality Division, DEQ
Janet Gillaspie, Northwest Region, DEQ
Chuck Clinton, Northwest Region, DEQ
Rick Gates, Laboratory, DEQ

RECEIVED
Stoel, Rives, Boley, Fraser And Wyse
By ta 8/25/86

D-1A (2-86)

Attachment A

NORTHERN DOANE'S LAKE INVESTIGATION
General Study Needs

I. Site Characterization

A. Geology

1. Describe site soils and geology

2. Utilize such things as borehole logs, soil cores, soil classification, strategraphic cross sections, etc. when developing and displaying this information.

3. Questions which should be addressed.

a. What type of soils are present on site?

b. What geologic strata are beneath the site?

c. What are the physical characteristics of the soils and geology?

B. Hydrology

1. Describe site groundwater. This should include a determination of groundwater flow rate and direction in both the horizontal and vertical direction for the uppermost aquifer and any aquifers hydraulically interconnected with it beneath the site.

2. Utilize such things as water level measurements, slug tests, pump tests, etc. when developing the necessary information.

3. Questions which should be addressed.

a. What is the uppermost aquifer?

b. How extensive is the uppermost aquifer beneath the site?

c. What are the current uses of the aquifer?

d. Is the uppermost aquifer hydraulically interconnected with other aquifers?

e. If there is interconnection, what are the current uses of the connected aquifers?

f. What are the horizontal and vertical gradients of the uppermost aquifer?

C. Site History

1. Describe site history, this should include a discussion of what the site has been used for, what were the past waste disposal practices and locations, and any additional past information which may help identify possible contamination sources.

2. Utilize such things as aerial photographs, soil survey maps, employee interviews, etc. when preparing this description.

II. Site Assessment

A. Site Soils and River Sediments

1. Examine site soils and river sediments for possible contamination. If contamination is present, what are the concentrations and how extensive is the problem?

2. Utilize the U.S. Environmental Protection Agency publication "Testing Methods for Evaluating Solid Waste" (SW-846) when designing and conducting these analyses.

3. Questions which should be addressed

   a. What specific area(s) is contaminated on Wacker Siltronics, Northwest Natural Gas Company, and Koppers property?

   b. What is the source(s) of this contamination?

   c. What are the contaminant concentration levels?

   d. What volume of soil is contaminated?

   e. How widespread is the river sediment contamination?

   f. Is water quality at risk in the river?

   g. What impact does the sediment contamination have on aquatic organisms in the river?

   h. Is river sediment contamination due to groundwater seepage, tar movement in the soil, past overland movement of tar to the river, or past tar disposal in the river?

   i. Will there be changes in the sediment contamination levels over time? Will they increase or decrease?

j. Have the contaminants most likely migrated through the soil, or were they originally spread over the land surface with fill material placed over the contaminants?

k. What is the likely fate of the soil and/or sediment contaminants on each property?

B. Ground and Surface Water

1. Assess the ground and surface water and determine if contamination is present and in what concentrations. If a contaminant plume(s) exists, describe the plume's location flow rate, direction, and contaminant concentration.

2. Utilize such guidance references as the U.S. Environmental Protection Agency publication "Technical Enforcement Guidance Document" August 1985 or similar RCRA or Superfund guidance manuals when designing, installing, and utilizing the groundwater monitoring network.

3. Questions which should be addressed.

a. What contaminants are in the groundwater beneath Wacker Siltronics, Northwest Natural Gas, and Koppers property?

b. How widespread is the contamination?

c. What is the source(s) of the contamination?

d. If the uppermost aquifer is hydraulically interconnected with the Basalt Aquifer, is the Basalt Aquifer at risk?

e. Are the contaminants moving towards the Willamette River?

f. What impact does contaminated groundwater discharging to the Willamette River have on river water quality?

III. Compounds of Interest

A. PAHs (EPA Method 610)

1)	Naphthalene	6)	Anthracene
2)	Acenaphthylene	7)	Fluroanthene
3)	Acenaphthene	8)	Pyrene
4)	Fluorene	9)	1,2 - Benzanthracene/chrysene
5)	Phenanthrene	10)	Benzo pyrene

B. Lead

C. 2,4-D

D. 2,4 - Dichlorophenol

E. Benzene

F. Toluene

IV. Remedial Action

A. Possible Need for Remedial Action

1. Evaluate the need for remedial action. This should include an examination of contaminant concentrations, direction of movement, rate of movement, exposure routes, etc. and the possible risks to the public and the environment.

2. Questions which should be addressed

a. Is remedial action necessary to protect human health and the environment?

b. What are the possible exposure routes, i.e., dermal, inhalation, oral?

c. What is the potential for site contaminants to enter these exposure routes? Will this potential increase or decrease over time?

B. Alternative Remedial Actions

1. Consider the potential alternative remedial actions for each contaminant. The alternatives should examine among other approaches whether to leave contaminants in place or remove them or a combination of these, or different treatment techniques.

2. Questions which should be addressed.

a. Should contaminated soils be removed or left in place?

b. Should contaminated groundwater be treated?

c. Should the tars be removed or left in place?

d. Should the contaminated sediment be removed or left in place?

e. What treatment techniques are available for the contaminated groundwater?

f. Should a slurry trench be built around the pit?

g. Should the site be posted to warn of contamination?

h. Should the river sediments be posted to warn of contamination?

C. Remedial Action Selection and Implementation Schedule.

1. Select the most appropriate remedial action.

2. Establish an implementation schedule.

Additional Item:

Although this site is not currently considered either a RCRA or Superfund site, these programs have considerable guidance material for conducting site investigations and developing and selecting remedial actions, therefore, they should be utilized where appropriate.

STATE OF OREGON

DEPARTMENT OF ENVIRONMENTAL QUALITY INTEROFFICE MEMO

TO: File DATE: August 8, 1986

FROM: Janet A. Gillaspie

SUBJECT: Meeting, July 28, 1986
Re: Northern Doane's Lake Investigation

Attending for the Department were:

Larry Patterson, Chuck Clinton, Neil Mullane, Dennis Adamczyk, and myself.

Industries in attendance were:

Jim Ellis and John Pitman of Wacker Siltronic, Ed Bolin and Ed Finklea of Northwest Natural Gas and Dick Bach of Stoel, Rives, Boley.

The Department reviewed the four major components of a past practice investigation for the Northern Doane's Lake area. That included:

1. Site characterization, including hydrogeological work to establish the groundwater flow direction and gradient and use of photo recognizance to determine where wastes were historically placed.

2. A site assessment to determine the type and concentration of pollutants in the groundwater, surface sediments, and river sediments.

   The Department asked that six parameters be included in the site assessment phase.

   Polyaromatic hydrocarbons (PAH's);
   2,4-dichlorophenol; 2,4-D; lead; benzene; and toluene;

3. A Remedial Action/Feasibility Study phase for each contaminant; however, remedial action should be evaluated using risk assessment tools for the parameters of possible choice from no action to removal.

4. A Recommended Action Plan from the companies working on this study.

We discussed, using approved sampling techniques, including EPA's publication SW 846 and other approved sampling methods. We asked that the EPA guidance for Preliminary Assessment, Site Investigations and Remedial Inspection/ Feasibility Studies be used as general guidelines in preparing the work. As the consultants or the project managers identify areas where the processes could be shorter this is an option, but they should discuss it with us beforehand.

Ellis of Wacker and Dick Bach questioned including river sediment sampling. Larry Patterson explained the rationale behind that, and the distinguishing features between Bunker C, which might be in the river from other practices, and the creosote ooze which is coming through the river bank. We reviewed the other areas where useful information might be gathered, including the work done on the southern end of Doane's Lake for Gould Battery, Rhone-Poulenc, the ambient sampling data that our Department has gathered, the information CH2M Hill had gathered for Wacker, Army Corps of Engineers information, and Port of Portland information.

Northwest Natural raised the question about what concern there was with Koppers. Larry Patterson explained there had been some information that it might have been a subsurface drain field for creosote wastewater. The gas company said they would be exploring that.

Overall, the meeting concluded by agreeing to the four general principles of the study, and doing the study as quickly as possible. The industries asked that the study be termed the Northern Doane's Lake Investigation. They will hire a consulting firm and return to us once that consulting firm has developed a study plan.

JAG:y
RY3143

STOEL, RIVES, BOLEY, FRASER & WYSE
ATTORNEYS AT LAW
900 S W FIFTH AVENUE, SUITE 2300
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WRITER'S DIRECT DIAL NUMBER

(503) 294-9213

SEP 05 1986

August 28, 1986

Thomas R. Hays, Esq.
Law Department
Koppers Company, Inc.
436 Seventh Avenue
Pittsburgh, PA 15219

Dear Tom:

Re: Northern Doane's Lake Investigation--
Portland, Oregon

Enclosed for your information and review by your Environmental Resources Department is a letter from the Oregon Department of Environmental Quality with their thoughts on elements of the Northern Doane's Lake area site assessment. Also enclosed are copies of the DEQ's and our versions of the meeting at which we discussed these issues.

Once the parties involved, i.e., Northwest Natural Gas Company, Wacker Siltronic Corporation and Koppers Company have reviewed the DEQ materials, we intend to meet with the selected consultant (Camp, Dresser & McKee) to give CDM its marching orders.

DISTRICT OF COLUMBIA OFFICE
1730 M STREET, N.W., SUITE 900
WASHINGTON, D.C. 20036-4505
(202) 955-4555

WASHINGTON COUNTY OFFICE
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10300 S W GREENBURG ROAD
TIGARD, OREGON 97223-5407
(503) 220-1441

SOUTHWEST WASHINGTON OFFICE
805 BROADWAY, SUITE 725
VANCOUVER, WASHINGTON 98660-3213
(206) 699-5900

We will welcome your participation in the site assessment, and will appreciate any assistance you may give in connection with development of the study plan.

Best regards.

Very truly yours,

Richard D. Bach

RDB:twa
Enclosures
cc: Mr. E. L. Bolin
Mr. John L. Pittman

Minutes

July 28, 1986 Meeting

Between

Northwest Natural Gas Company, Wacker Siltronics

and the Oregon Department of Environmental Quality

Attendees:

Larry Patterson, Chuck Clinton, Neil Mullane, Dennis Adaruczyk, and Janet Gillaspie, all with the Oregon Department of Environmental Quality; Jim Ellis and John Pitman with Wacker Siltronics; Ed Bolin, Ed Finklea, Northwest Natuarl Gas Co.; and Richard Bach, Stoel, Rives, Boley for Northwest Natural Gas Co.

The purpose of the meeting was to discuss the scope of the Oregon Department of Environmental Quality's (DEQ's) investigation of the Northern Doane's Lake property.

Ms. Gillaspie started the meeting by describing the scope of the investigation DEQ envisions. The geographic scope would be from the Railroad Bridge to the northern end of the Gasco property. DEQ requests a four-phased investigation.

The first phase will be a site characteristics study. Phase one will include an analysis of information currently available, including ground water flows, photo recognizance work, review of existing files and other investigative work in the area regarding the past activities of the Northern Doanes Lake properties. The purpose is to narrow the scope of later investigations.

The second phase would be site assessment. The site assessment phase will include analysis of river sediments, surface water and ground water.

The third phase will be a remedial assessment, which would involve sampling and analysis to determine if suspected pollutants are present. Suspected pollutants mentioned by DEQ include PAH's, lead, toluene, benzine, and creosote compounds.

The final phase would be risk assessment, which would focus on our recommendations for what action, if any, to take based on the findings from the first three phases. The recommendations could range from a do-nothing alternative, to action alternatives involving cleanup and removal.

Because the site is not a "superfund" site, strict compliance with EPA assessment criteria is not necessary. DEQ officials stated that the EPA study outline provides "useful guidance" and the investigation should "stay within the parameters" of the EPA criteria. However, lack of superfund designation provides considerable discretion and will avoid considerable expense in conducting this investigation.

Discussion next turned to specific aspects of the study. Among the questions DEQ is seeking answers for are:

1) What is the source of the contamination (tarpits or other sources)?

2) How did the contamination get there?

3) Is the contamination getting into the Willamette River?

4) What is the best way to pattern the study?

5) Is soil sampling necessary?

Larry Patterson of DEQ spoke about some specifics. He stated that DEQ wants the study to assess the quality of the shallow ground water, as well as the basalt aquifer. Patterson contends that DEQ's analyses to date show that nothing is found in the Willamette River itself when samples are taken off the shore of the property. However, contamination is evident on the bank of the river off the property where the old gas plant existed.

The question Patterson is looking for a definitive answer to through the course of the study is: Should any contamination be removed, or if the material is left on site, what impact is it likely to have on aquatic micro organisms.

Discussion next turned to the possible involvement of Koppers in the study and the problem. Gillaspie inquired at the outset about Koppers' absence from the meeting. Bach stated that they were unable to attend due to scheduling problems. Patterson stated that while DEQ has no reason to be concerned that Koppers' current operation is causing contamination on the property, there is a "rumor" that at one time Koppers used an underground pipe to dispose of waste materials. If Koppers had subsurface disposal of creosote from a leech pipe, which is apparently the "rumor" Patterson is acting on, then there is reason to believe that the property is contaminated in areas other than the tarpit or those areas where tarpit materials were spread.

Regarding the tarpit, Patterson's primary concern seems to be the existance of creosote in the tarpit. DEQ uses "creosote" in a generic sense, rather than as a specific product.

DEQ has data based on sampling, which they are willing to share. The Southern Pacific Bridge is a sampling station that DEQ has compiled information from. The specific issue Patterson wants addressed concerning the tarpits is: Where did the tarpit material get picked up and bulldozed to?

Patterson is also concerned about possible contamination of ground water at the basalt layer, which is about 60 - 90 feet below the surface. Leakage may be from the basalt layer up, but there are no known users of the basalt aquifer or the shallow aquifer.

During the first phase of the study there are several sources of materials that can be relied on. DEQ has files on the Northern Doanes Lake investigation and is willing to share all the information with Northwest Natural, Wacker and Koppers. DEQ urged Northwest Natural to search its files and to talk with employees who are knowledgeable. Wacker has extensive information based on the work done for them by CH2M Hill. The Corps of Engineers may have some data. Photo recognizance work has also been done. Those photos should be instructive in limiting the geographic scope of the latter phases of the investigation.

At the end of the meeting representatives of Northwest Natural and Wacker assured DEQ that we would meet again with DEQ once the consultant has been selected and initial work has been completed. Janet Gillaspie informed the group that DEQ would send a letter outlining the four-step investigation described in the meeting. No specific timetable was mentioned for initiation or completion of the study.

Jordan

NW-2-3

KOP-COM III
Interoffice Correspondence

To	JORDAN DERN	From	JOHN A. OXFORD
Location	K-901	Location	NORTHWEST PLANT PORTLAND OREGON
Subject:	MEETING OF JUNE 20, 1986	Date	6-26-86

DEAR JORDAN,

PLEASE FIND ENCLOSED, A SUMMARY OF MY MEETING WITH NORTHWEST NATURAL GAS COMPANY, AND WACKER SILTRONIC CORP. ON FRIDAY JUNE 20, 1986. ALSO ENCLOSED YOU WILL FIND A COPY OF THE WACKER LAND SURVEY, CONDUCTED BY CH2M HILL CORP. A PLOT MAP OF OUR PLANT, AND A VIDEO TAPE OF THE PROPERTIES IS ALSO BE BEING INCLUDED FOR YOUR ASSESMENT. THE COPIES FOR JILL BLUNDON IN OUR LEGAL DEPT. AND LARRY FLAHERTY ARE IN YOUR PACKAGE, WOULD YOU PLEASE SEE THAT THEY RECEIVE THEIR COPY. THERE IS NO COPY OF ANY OF THIS INFORMATION BEING RETAINED HERE IN THE PLANT.

SINCERELY John A Oxford

JOHN A. OXFORD

PLANT MANAGER

RECEIVED

JUN [illegible] 1986

Environmental Resources

CC: JILL BLUNDON K-1401
LARRY FLAHERTY K-1750

Interoffice Correspondence

SUMMARY OF MEETING ON FRIDAY JUNE 20, 1986

1. NORTHWEST NATURAL GAS CHAIRED THE MEETING AT THEIR MAIN OFFICES IN PORTLAND OREGON.

2. THE MEETING WAS CALLED BECAUSE THE OREGON D.E.Q. INTENDED TO ISSUE DEMANDS TO NORTHWEST NATURAL GAS COMPANY, WACKER SILTRONIC CORP. AND KOPPERS COMPANY NORTHWEST PLANT, REQUIRING THE ABOVE TO DO PROPERTY SURVEY'S AND LAND ASSESMENTS TO DETERMINE THE CHEMICAL CONTAMINATION IN THE SOIL, AIR AND WATER ON OUR RESPECTIVE PROPERTIES. NORTHWEST NATURAL GAS GOT THE D.E.Q. NOT TO PUT DOWN WRITTEN DEMANDS BUT ALLOW THE CONCERNED PARTIES TO MEET AND COME UP WITH A PLAN OF ACTION TO SUBMIT TO D.E.Q.

3. NORTHWEST NATURAL GAS WAS REPRESENTED BY THEIR LAND AND PROPERTIES MANAGER, TWO ATTORNEY'S, THEIR OPERATIONS MANAGER, AND THEIR PUBLIC RELATIONS MANAGER. WACKER SILTRONIC WAS REPRESENTED BY THEIR VICE PRESIDENT OF OPERATIONS FOR PORTLAND OREGON. THEIR ENVIORNMENTAL AFFAIRS MANAGER AND THEIR SENIOR ENGINEERING MANAGER. KOPPERS COMPANY WAS REPRESENTED BY THE PORTLAND OREGON PLANT MANAGER.

4. THE GAS COMPANY STATED THAT THE PORTION OF THE WACKER PROPERTY WHERE CHEMICAL CONTAMINATION WAS FOUND, WAS AT ONE TIME OWNED BY THE GAS COMPANY. THIS WAS A 39 ACRE PARCEL JUST TO THE EAST OF OUR PLANT. THEY ALSO STATED THAT THE GAS COMPANY HAD DUMPED TAR SLUDGES ON THIS PROPERTY. WACKER STATED THAT A LEVEL OF 2 PPM OF ANTHRACINE, NAPHTHELENE, AND CREOSOTE HAD BEEN DETECTED IN THE TEST BORINGS AND WELLS THAT THEY INSTALLED. WACKER HAD ANNOUNCED A 6.3 MILLION EXPANSION OF THEIR PLANT ON TO THIS PROPERTY THEY HAD PURCHASED THROUGH THE CITY OF PORTLAND. THEN WHEN THE CONTAMINATION WAS FOUND, THE PLANS WERE PUT ON HOLD. IN INFORMAL MEETINGS SINCE THEN BOTH D.E.Q. AND E.P.A. TOXICOLOGISTS STATED THEY DIDN'T FEEL THE PROBLEM WAS THAT BAD. BUT WHEN WACKER ASKED FOR A CLEARENCE TO EXPAND AND BUILD, BOTH D.E.Q. AND E.P.A. REFUSED TO CLEAR THE LAND.

5. JANET GILLESPIE OF D.E.Q. (DISTRICT MANAGAER) STATED THE MAJOR AREA OF CONCERN TO HER DEPARTMENT, IS OUR PLANT SITE AND THE PROPERTY BEHIND OUR PLANT, NORTHWEST NATURAL GAS PROPERTY. THERE WERE SETTLEING PONDS AND A NATURAL POND ON THE PROPERTY. ALSO OUR OLD LEACH FIELD FOR DRAINING WATER. THE SETTLEING PONDS WERE USED BY THE GAS COMPANY IN THEIR COKE GAS PLANT OPERATION.

6. WACKER STATED ALL THEY WANT IS A CLEARENCE TO USE THEIR PROPERTY. THEY WANT TO ACHEIVE THIS AS INEXPENSIVELY AS POSSIBLE.

7. THE GAS COMPANY ATTORNEY STATED THAT THERE ALREADY WAS AN INCIDENT IN ASTORIA OREGON AT THE PACIFIC POWER AND LIGHT PLANT THAT WAS A COKING OPERATION. IT SEEMS THAT YOUNGS BAY IS THE BOUNDARY OF THE PROPERTY AND RAW COAL TAR WAS FOUND ON THE FLOOR OF THE BAY. E.P.A. AND D.E.Q. INVESTIGATED AND PACIFIC POWER AND LIGHT SPENT 1.3 MILLION DOLLARS TO ARRIVE AT THE DISCISION THAT THE BEST THING TO DO WAS TO DO NOTHING. THE FISH IN THE AREA SEEMED TO THRIVE ESPECIALLY IN THE AREA OF THE TAR. THE GAS COMPANY PUT FORTH THE IDEA THAT CONSULTANTS SHOULD BE BROUGHT IN TO ADVISE ON A COURSE OF ACTION TO SATISFY D.E.Q WHETHER IT BE GROUND AND SOIL MONITORING OR SOME OTHER STUDY OF THE PROPERTY.

8. THE GAS COMPANY AND WACKER BOTH ASKED IF KOPPERS WOULD USE OUR EXPERINENCE AND EXPERTISE, AND POSSIBLY, TAKE CHARGE OF ANY ACTION TAKEN IN THIS MATTER.

9. THE GAS COMPANY ASKED FOR AN AGREEMENT TO CALL IN CONSULTANTS, WACKER AGREED, KOPPERS ABSTAINED, ASKING FOR TIME TO REVIEW THE SITUATION. I DID AGREE TO RELAY THE RESULTS OF THIS MEETING TO PITTSBURGH, AND TO PASS ON THE REQUEST FOR HELP AND GUIDANCE.

10. THE COST OF ALL THIS IS ALSO IN QUESTION, AS TO WHO COVERS WHAT PERCENTAGE.

AS OF NOW ANOTHER MEETING HAS NOT BEEN SCHEDULED, ALTHOUGH I WAS TOLD WE WOULD RECEIVE MORE NOTICE THAN LAST TIME, SO THAT WE CAN INFORM OUR PITTSBURGH OFFICE. I WILL KEEP YOU INFORMED OF ANY FURTHER DEVELOPMENTS.

REGARDS,

John A. Oxford

JOHN A. OXFORD

NORTHWEST PLANT MANAGER

WACKER

HARRY G. SCHMID
Vice President Operations

Wacker Siltronic Corporation
P. O. Box 03180, Portland, OR 97203
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Koppers021696

A PRELIMINARY REPORT
SOIL INVESTIGATION FOR PROPOSED
POLYSILICON PLANT

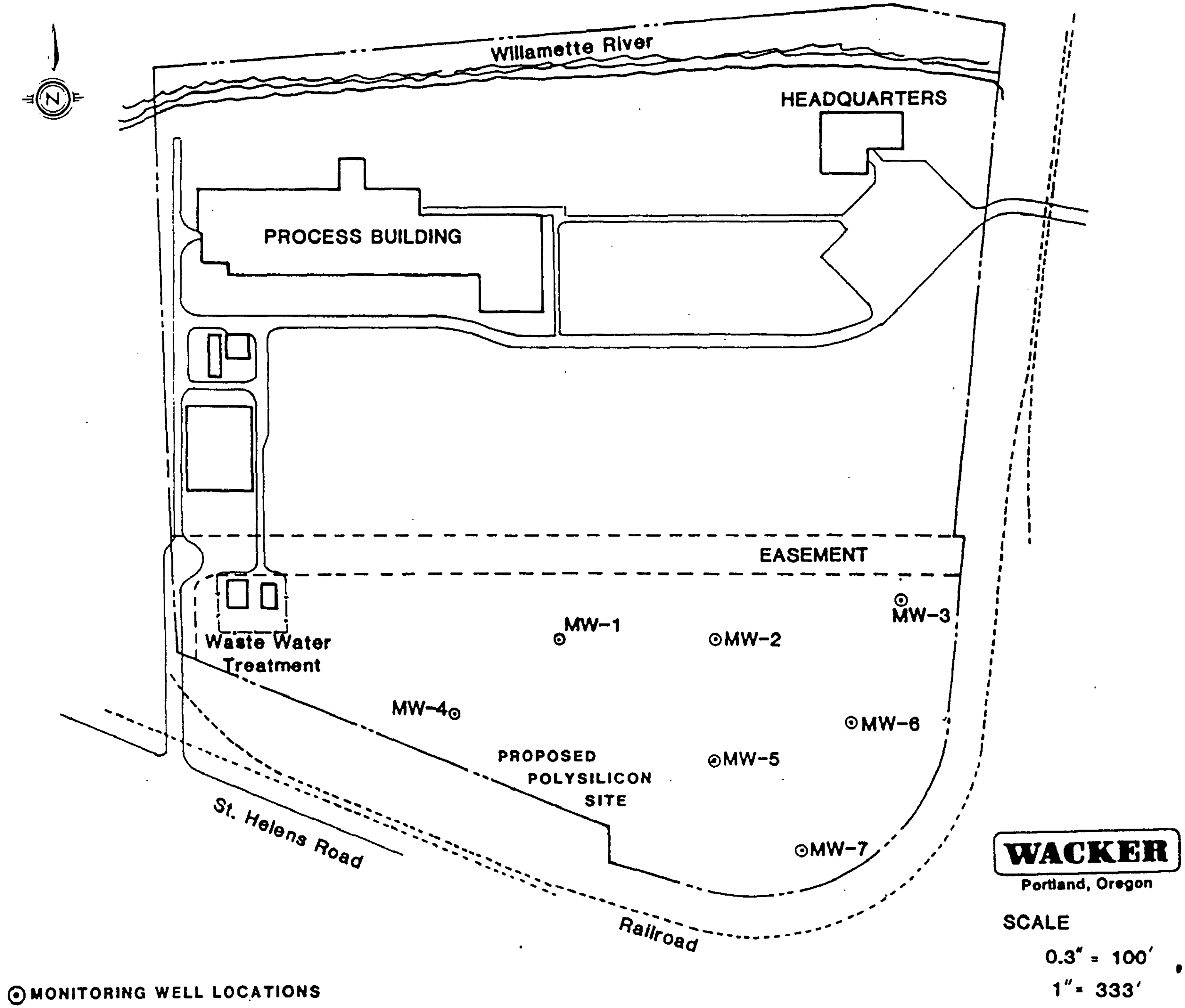
WACKER SILTRONIC CORPORATION
PORTLAND, OREGON

Prepared By

CH2M HILL NORTHWEST, INC.
2020 S.W. Fourth Avenue
Portland, Oregon 97201

JUNE 1985
P19786.A1.00

Figure 2 - MONITORING WELL LOCATIONS ON PROPOSED POLYSILICON SITE



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INTRODUCTION

Wacker Siltronic Corporation contracted CH2M HILL to conduct a soil investigation on Wacker's property located in the Northwest Industrial area of Portland, Oregon. The purpose of the investigation was to evaluate subsurface conditions within a section of the vacant portion of the site as part of the preliminary engineering for the design and construction of the proposed polysilicon plant.

The subsurface investigation was initiated based on the presence (both past and current) of industrial manufacturing and processing facilities within the Doane Lake area and recent environmental regulations--the Comprehensive Environmental Response, Compensation, and Liability Act of 1980 (CERCLA) and the Resource Conservation and Recovery Act of 1976 (RCRA). Wacker was concerned that past or current management practices of industrial wastes within the Doane Lake area may have resulted in the presence of these materials or subsequent residues on Wacker's property, which would prevent or hinder the construction of the proposed polysilicon plant and future expansions of the existing manufacturing facilities.

This preliminary report describes the soil boring, sampling, and analytical procedures and construction of the groundwater monitoring wells. It also presents the results of the laboratory analyses, which indicate the presence of chemical constituents commonly associated with petroleum products, coal tar, and pesticides. Interpretation of the results presented in this report is beyond the scope of our contract and will be included as part of future work (i.e., site environmental assessment).

SITE DESCRIPTION

Wacker Siltronic Corporation is located in the northwest section of the City of Portland on the west bank of the Willamette River. The property, consisting of approximately 85 acres, is situated between the St. Johns Bridge and the Burlington Northern Railroad Bridge and is essentially rectangular in shape. Property boundaries are the Willamette River to the northeast; the Burlington Northern Railroad berm, which provides the approach to the railroad bridge, to the southwest; Burlington Northern track and adjacent N.W. St. Helens Road to the southwest; and the property line shared with Northwest Natural Gas and the Koppers Company to the northwest. Figure 1 shows the location of the Wacker property in relation to these landmarks and other industrial companies in the vicinity.

The project site is located in a vacant field about 400 feet south of Wacker's existing facilities, as shown in Figure 2. The site is bounded on the north by the existing Wacker plant, and is bordered on the south and east by Burlington Northern Railroad right-of-way. Underground utilities, consisting of oil, water, gasoline, natural gas, and sewer lines, as well as electric and telephone cables, are located in a 100-foot-wide easement on the north side of the site.

The site is relatively level with elevations ranging from about 40 feet National Geodetic Vertical Datum 1929 (NGVD) in the southern part to about 32 feet in the northern part. The local ground surface is deeply rutted with heavy machinery tracks and ditches. Wood debris, concrete, and other waste materials are present in small amounts across the field.

FIELD INVESTIGATION

The field investigation was performed from April 1 through 5, 8 and 9, 1985. The investigation involved collecting soil

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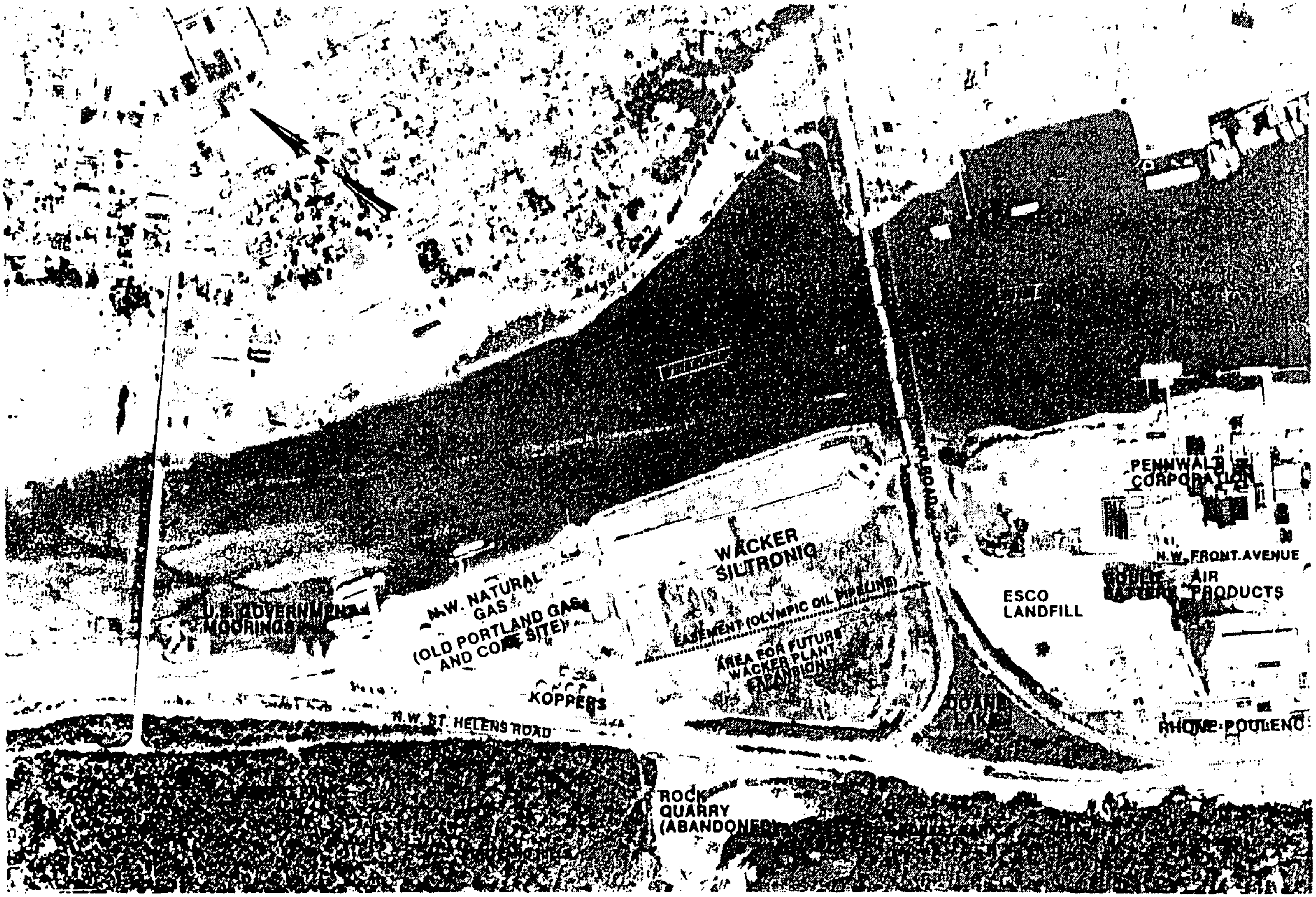


Figure 1 WACKER SILTRONIC PLANT AND SURROUNDING VICINITY (1983)

SCALE: 1" = 940 FEET (1 cm : 110 m)

Koppers021701

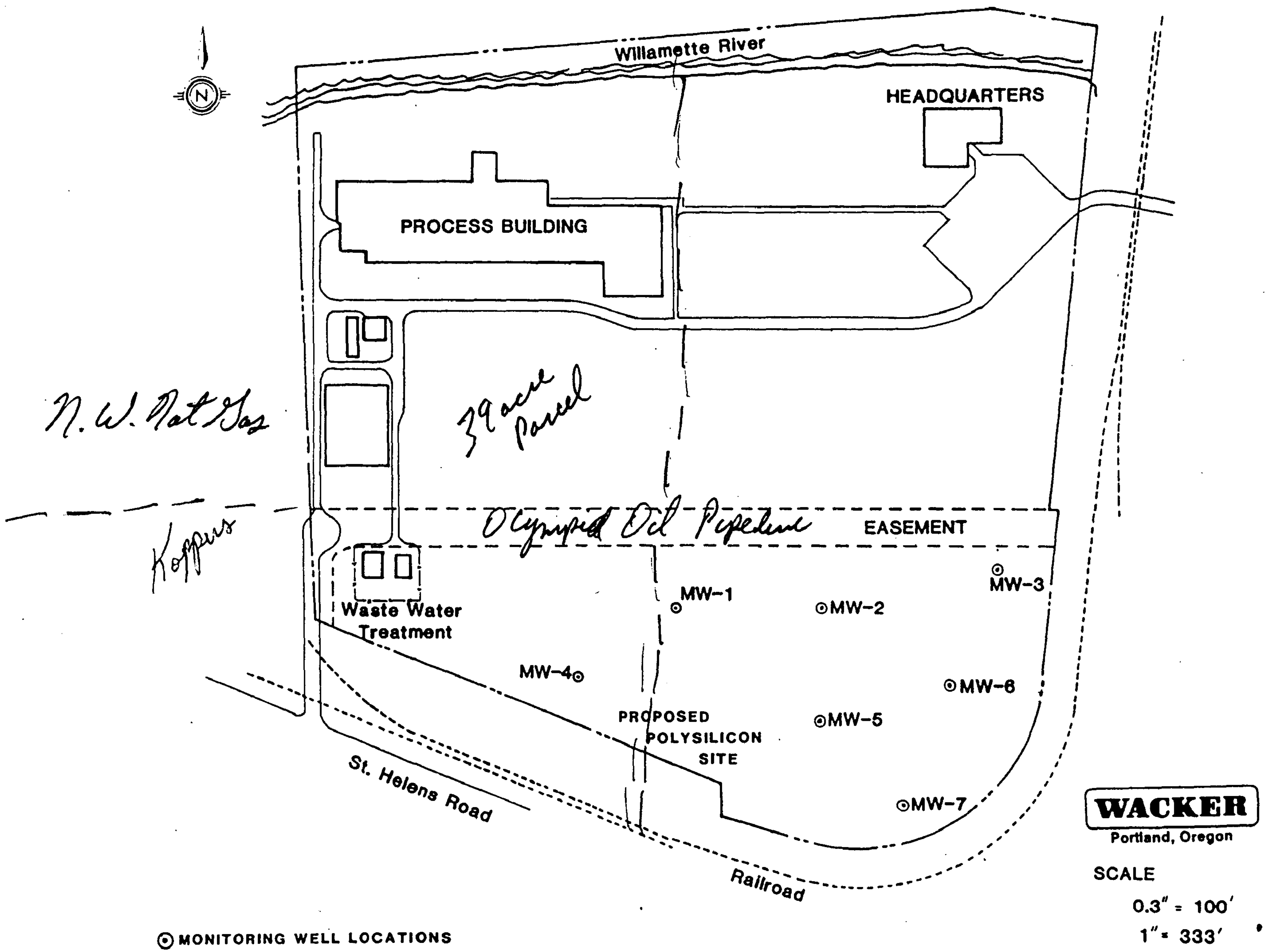


Figure 1 - MONITORING WELL LOCATIONS ON PROPOSED POLYSILICON SITE

Koppers021702

samples from seven soil borings, all of which were completed as monitoring wells. The locations of the borings/monitoring wells (designated MW-1 through MW-7) are shown in Figure 3. The soil borings were drilled and monitoring wells constructed by Geotech Explorations, Inc., of Beaverton, Oregon, under the field observation of a CH2M HILL hydrogeologist.

SOIL BORING AND SAMPLING

The seven soil borings were drilled using a CME-55 rotary drill rig and 6¼-inch (OD) hollow-stem augers. Soil samples were recovered at 5-foot intervals. Samples were recovered using a 2-inch split-spoon sampler following the requirements of the standard Penetration Test (ASTM D 1586). The sampler was driven 18 inches ahead of the auger bit to collect an undisturbed soil sample. The depth of soil borings ranged from 31.5 to 41.5 feet, generally between 5 and 20 feet below fill material and into native soils. The CH2M HILL hydrogeologist inspected, classified, and logged each borehole and soil sample in the field in approximate accordance with the Visual-Manual Procedure (ASTM D 2488). The log included a physical description of the soil type and a visual and odor estimate for the presence of contaminants. Sample intervals, soil types, and descriptions of the soil types and soil borings are provided in the soil boring record drawings presented in the appendix.

A composite soil sample from each split-spoon was placed in a clean 8-ounce glass jar. Each jar was filled to the top before it was sealed. The label that had been affixed to the sample container was then filled out. Information on the label included the facility name, the sample identification number, the name of the person collecting the sample, date and time of collection, and the location of the sample. The sample was then placed in a portable cooler until the end of each day when it was transferred via chain-of-custody record

Koppers021703

to a refrigerator located inside the laboratory area of Wacker's wastewater treatment building. Chain-of-custody records were kept for every sample collected. Sample custody was maintained until the samples were relinquished directly to Wacker or an outside laboratory. A sample of the chain-of-custody form used is illustrated in the appendix.

All drilling equipment was thoroughly steam-cleaned before drilling each boring. Oil and grease were not used at drill rod connection fittings to prevent contamination of the soil samples. The split-spoon soil sampler was decontaminated between each use. Decontamination steps included:

- Washing off grass, soil particles, mud smears, etc., in a bucket of tap water
- Washing in a 5 to 10 percent solution of trisodium phosphate (TSP) and tap water
- Two rinses in clean tap water
- One rinse each with distilled water and methanol

The same decontamination procedures were used for the stainless steel utensils used to transfer soil from the sampler to the jars. Utensils were stored in a new plastic bag until they were ready for use.

A number of quality control measures were performed in order to ensure that all data generated was of known precision, and accuracy and conformed to accepted procedures. Soil sample splits were collected at soil boring sites MW-2, -5, and -6. Several transfer blanks were also prepared to check for potential contamination of sample jars. Samples of water poured into the drill holes to hold back heaving sands were also collected.

GROUNDWATER MONITORING WELL CONSTRUCTION

Seven groundwater monitoring wells were constructed by installing well screen casing assemblies into the completed drill holes.

Each assembly consisted of 2-inch diameter schedule 40 PVC. Well screens consisted of a 15-foot length of PVC with three rows of 0.010-inch machine-slotted openings. A 5-foot solid PVC sump was placed beneath each screen. Solid PVC casing was placed above the screen and extended to the ground surface. Casing lengths were connected by flush-threaded fittings; no solvents were used to connect PVC sections.

Each well screen interval was gravel-packed by pouring a coarse-grained sand into the annular space between the PVC and the hollow stem of the auger. As the auger was pulled up, the sand dropped out of the hollow stem into the well to envelop the well screen. After the sand pack was installed to 2 or 3 feet above the top of the well screen, the annular space between the PVC casing and the hollow stem was filled with 1 to 2 feet of pelletized bentonite followed by cement grout to the ground surface. A summary of the construction of each well is provided in the soil boring record drawings presented in the appendix.

Well heads were completed at approximately 2 feet above the ground surface with locking steel caps that were anchored 2 to 3 feet into the cement grout mixture. The monitoring wells were developed by the drilling contractor by blowing compressed air through an air line into the sump (tail pipe) located below the well screen. Development was considered complete when the return water became visibly less turbid. The PVC monitoring well assembly was thoroughly steam-cleaned before construction of each well. As a measure of additional quality assurance and control, samples of the sand filter pack material used for well construction were collected and saved.

LABORATORY ANALYSIS AND SOIL SAMPLE RESULTS

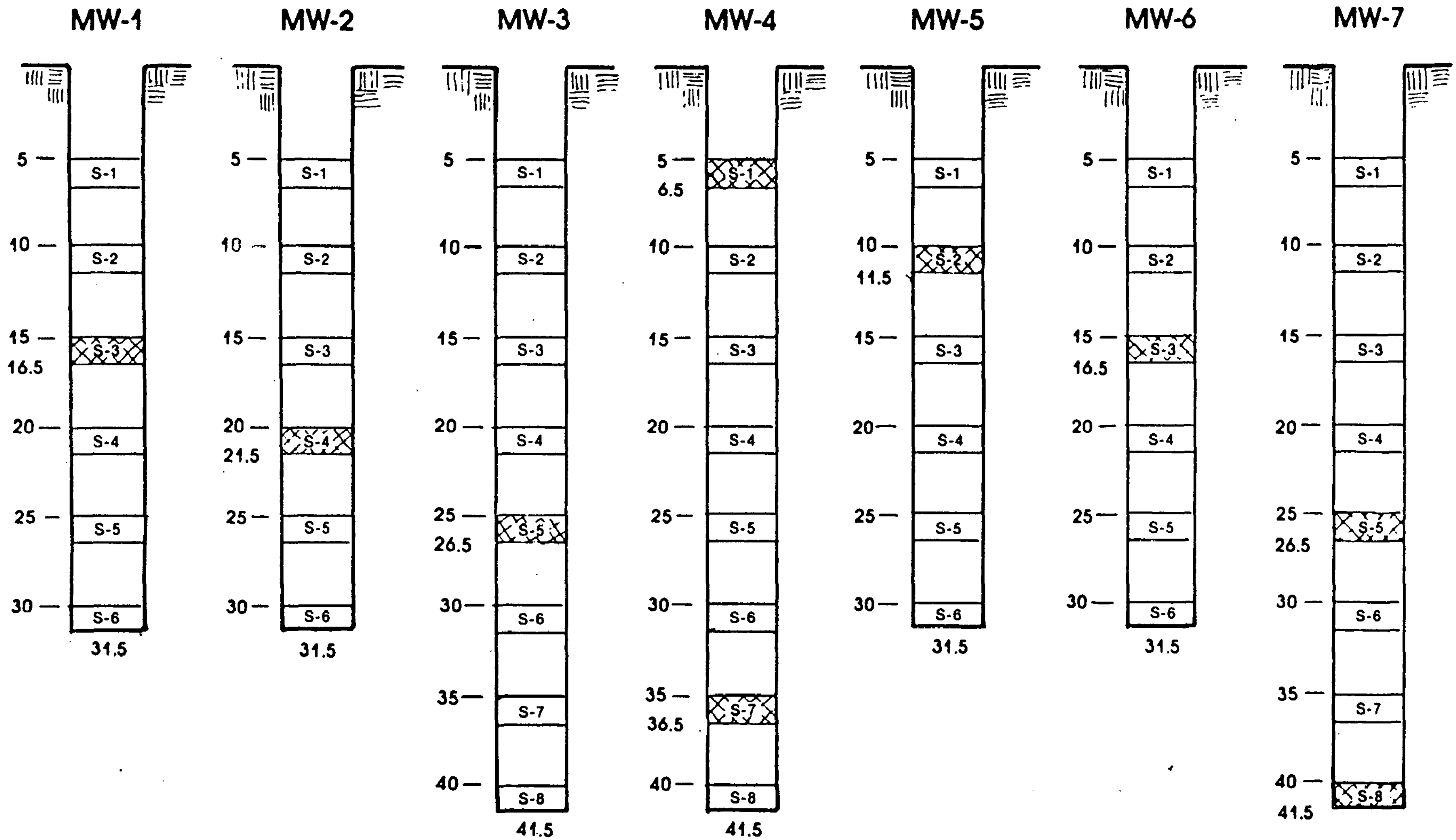
The field sample description generally provided the basis for selecting samples to be sent to the laboratory for chemical analysis. Samples in which contaminants were most apparent visually and by odor were selected for analysis. Also, at least one soil sample from each soil boring site was analyzed, as was at least one sample at every 5-foot depth (except at 30 feet) from the combination of all soil boring locations. Figure 4 shows the approximate vertical location of the collected soil samples for each monitoring well and identifies which samples were analyzed.

The selection of the chemical analyses to be performed on each soil sample was based on the past and current industrial chemical manufacturing and handling activities within the Doane Lake area (i.e., petroleum products, coal tar, creosote, pesticides, battery recycling, foundry process waste disposal). The following chemical analyses were performed on the selected soil samples by Coffey Laboratories, Inc. (located at 4914 N.E. 122nd Avenue, Portland, Oregon):

- Oil and grease
- Phenols
- Volatiles and polynuclear aromatic hydrocarbons
- E.P. toxicity for:

  --pesticides
  --herbicides
  --arsenic
  --barium
  --cadmium
  --chromium
  --lead
  --mercury
  --selenium
  --silver

Koppers021706



Analyzed Collected Soil Samples

(NOTE: Parallel lines denote soil samples. These were taken at 1.5 ft intervals starting every five feet)

Figure 4
GENERAL VERTICAL LOCATION COLLECTED SOIL SAMPLES WACKER SILTRONIC CORPORATION PORTLAND, OREGON

CH2M HILL

Koppers021707

The results of the laboratory analysis are presented in Table 1. A copy of the Coffey Laboratories, Inc., report is included in the appendix.

The field samples were analyzed for phenols, pesticides, herbicides, metals, volatiles, and aromatic hydrocarbons by EPA methods (SW-846, EPA-602, 4-79-020); the oils and grease were measured by standard methods (method 503 D).

Laboratory quality assurance procedures included method blanks, duplicates for precision measurements, and spikes for accuracy measurements. The frequency of blank, duplicate, and spike measurements was at a minimum of 10 percent per set to meet the standard requirements. The data were evaluated in view of the QC findings and found acceptable.

A review of the laboratory analysis indicates that each soil boring location contained a mixture of substances commonly associated with petroleum products, coal tar, and pesticides. The following list summarizes the principal substances found in each of the seven borings:

- MW-1 PAHs, petroleum products
- MW-2 PAHs, petroleum products
- MW-3 petroleum products
- MW-4 petroleum products
- MW-5 PAHs, petroleum products, 2,4-D
- MW-6 petroleum products, 2,4-D
- MW-7 petroleum products

Interpretation of results presented in Table 1 is beyond the scope of this report and will be included as part of future work (i.e., site environmental assessment).

Table 1
WACKER SILTRONIC, POLYSILICON PLANT SOILS INVESTIGATION
SOURCE: COFFEY LABORATORIES, INC./APRIL 30, 1985
RESULTS OF SOILS ANALYSIS

Chemical Compounds	MW-1, S-3 (15-16.5 ft)	MW-2, S-4 (20-21.5 ft)	MW-3, S-5 (25-26.5 ft)	MW-4, S-1 (5-6.5 ft)	MW-4, S-7 (35-36.5 ft)	MW-5, S-2 (10-11.5 ft)	MW-6, S-3 (15-16.5 ft)	MW-7, S-5 (25-26.5 ft)	MW-7, S-8 (40-41.5 ft)	Detection Limits	Reference Criteria
Organic Analyses											
o Volatile Compounds											
1,1,1-Trichloroethane	0.01	BD	BD	BD	BD	BD	BD	BD	BD	0.01	pp, PDW (*)
1,2-Dichloroethane	BD	BD	BD	BD	BD	BD	BD	BD	BD	0.01	pp, PDW (*)
1,1,2,2-Tetrachloroethylene	2.2	11	BD	BD	BD	0.14	BD	BD	BD	0.05	
Toluene	1.2	20	0.11	BD	BD	0.20	BD	BD	BD	0.1	pp
Chlorobenzene	0.04	BD	BD	BD	BD	BD	BD	BD	BD	0.04	pp
Ethyl Benzene	17	5.4	BD	BD	BD	BD	BD	BD	0.05	0.04	pp
Xylene	146	116	BD	BD	BD	1.5	BD	2.8	1.2	1.0	
o Acid Extractables											
Phenol	0.35	3.1	0.20	0.30	0.17	0.07	0.05	0.06	0.08	NR	pp, SWQ
2-Chlorophenol	ND	7.8	0.08	0.26	ND	ND	0.13	ND	0.14	NR	pp, SWQ
2-Nitrophenol	ND	0.20	ND	ND	ND	ND	ND	ND	ND	NR	pp, SWQ
2,4-Dimethylphenol	ND	3.1	ND	ND	ND	0.22	0.17	ND	ND	NR	pp, SWQ
2,4-Dichlorophenol	ND	2.7	ND	ND	ND	0.24	ND	ND	ND	NR	pp, SWQ
2,4,6-Trichlorophenol	ND	ND	ND	ND	ND	0.22	ND	ND	ND	NR	pp, SWQ
2,4-Dinitrophenol	ND	ND	ND	ND	ND	0.81	ND	ND	ND	NR	pp, SWQ
Pentachlorophenol	ND	ND	ND	ND	0.31	6.9	5.1	ND	ND	NR	pp,SWQ,SHW
o Base Neutral Extractables											
Naphthalene	6.7	360	BD	BD	BD	230	BD	BD	BD	1	pp
Acenaphthalene	5.6	230	BD	BD	BD	24	BD	BD	BD	1	pp
Acenaphthene	8.0	560	BD	BD	BD	28	BD	BD	BD	1	pp
Fluorene	5.0	290	BD	BD	BD	20	BD	BD	BD	1	pp
Phenanthrine-Anthracene (***)	32	1,400	3	BD	BD	150	BD	1.6	BD	1	pp
Fluoranthene	16	530	BD	BD	BD	50	BD	1.1	BD	1	pp
Pyrene	18	550	BD	BD	BD	57	BD	1.2	BD	1	pp
Chrysene	12	92	BD	BD	BD	36	BD	1.7	BD	1	pp
Benzo (b) + Benzo (k) Fluoranthene (***)	8	120	BD	BD	BD	200	BD	BD	BD	1	pp
Benzo (a) pyrene	19	120	BD	BD	BD	100	BD	BD	BD	1	pp
Indeno (1,2,3-CD) Pyrene + Dibenzo (a,b) Anthracene (***)	BD	270	BD	BD	BD	7	BD	BD	BD	1	
Benzo (ghi) Perylene	BD	360	BD	BD	BD	25	BD	BD	BD	1	pp
o Pesticides (EP Toxicity)											
Gamma BHC (Lindone)	BD	BD	BD	BD	BD	BD	BD	BD	BD	0.04	pp, SHW, PDW
Endrin	BD	BD	BD	BD	BD	BD	BD	BD	BD	0.002	pp
Toxaphene	BD	BD	BD	BD	BD	BD	BD	BD	BD	0.05	pp

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Table 1 (Continued)

Chemical Compounds	MW-1, S-3 (15-16.5 ft)	MW-2, S-4 (20-21.5 ft)	MW-3, S-5 (25-26.5 ft)	MW-4, S-1 (5-6.5 ft)	MW-4, S-7 (35-36.5 ft)	MW-5, S-2 (10-11.5 ft)	MW-6, S-3 (15-16.5 ft)	MW-7, S-5 (25-26.5 ft)	MW-7, S-8 (40-41.5 ft)	Detection Limits	Reference Criteria
ganic Analyses (EP Toxicity)											
Arsenic	BD	BD	BD	BD	BD	BD	BD	BD	BD	0.05	pp,SHW,SWQ,PDW
Barium	0.05	0.11	0.05	0.09	BD	0.05	0.11	0.08	0.15	0.05	SHW, SWQ
Cadmium	BD	BD	BD	BD	BD	BD	BD	BD	BD	0.05	pp,SHW,SWQ,PDW
Chromium	BD	BD	BD	BD	BD	BD	BD	BD	BD	0.05	pp,SHW,SWQ,PDW
Lead	BD	BD	BD	BD	BD	BD	BD	BD	BD	0.05	pp,SHW,SWQ,PDW
Mercury	BD	BD	BD	BD	BD	BD	BD	BD	BD	0.05	pp,SHW,PDW
Selenium	BD	BD	BD	BD	BD	BD	BD	BD	BD	0.05	pp,SHW,PDW
Silver	BD	BD	BD	BD	BD	BD	BD	BD	BD	0.05	pp,SHW,PDW
Miscellaneous Analysis											
o non-PP Phenols/Cresols											
3 & 4-Chlorophenol	0.44	17.5	0.06	ND	ND	1.7	0.32	ND	ND	NR	SHW, SWQ
2,4,5-Trichlorophenol	ND	1.9	ND	ND	ND	ND	ND	ND	ND	NR	SHW, SWQ
2,3,4,5-Tetrachlorophenol	4.9	256	ND	0.40	ND	0.23	4.7	0.06	0.25	NR	SHW, SWQ
2,3,4,6-Tetrachlorophenol	0.24	ND	ND	ND	ND	ND	ND	1.0	ND	NR	SHW, SWQ
2,3,5,6-Tetrachlorophenol	ND	4.0	ND	0.58	0.11	0.33	0.55	ND	0.46	NR	SHW, SWQ
o-Cresol	0.04	3.4	ND	0.02	ND	0.19	0.05	ND	ND	NR	
m- and p-Cresol (***)	0.006	ND	ND	0.08	ND	ND	ND	ND	ND	NR	
o Non-PP Pesticides (EP Toxicity)											
Methoxychlor	BD	BD	BD	BD	BD	BD	BD	BD	BD	0.1	SHW, PDW
2,4-D	BD	BD	BD	BD	BD	10.0	160.0	BD	BD	10	SHW, PDW
2,4,5-TP (Silvex)	BD	BD	BD	BD	BD	BD	BD	BD	BD	1	SHW, PDW
Misc. Constituents/Parameters											
Oil and Grease	0.340%	0.1498%	0.0587%	0.914%	0.0304%	0.190%	0.0539%	0.0650%	0.0586%		

Unless otherwise specified, all units are mg/kg (mg/L).

- pp — Priority Pollutant
- PDW — National Interim Primary Drinking Water Regulations
- PDW(*) — Proposed N.I.P.D.W.R.
- SHW — State of Oregon Hazardous Waste Administrative Rules
- SWQ — State of Oregon Water Quality Administrative Rules
- BD — Parameter detected, but below analytical quantification limits.
- ND — Analyzed, but not detected.
- NR — Not reported.
- (***) — Reported as sum of two compounds.

TABLE 1

Groundwater Analyses
Wacker Siltronic Corp.
Proposed Polysilicon Site
(Concentrations expressed in parts per million)

Inorganics	MW-1	MW-2	MW-3	MW-4	MW-5	MW-6	MW-7
Antimony	<.005	<.005	<.005	<.005	<.005	<.005	<.005
Arsenic	.005	<.005	.005	<.005	<.005	.010	<.005
Beryllium	<.001	<.001	<.001	<.001	<.001	<.001	<.001
Cadmium	.003	.002	.001	.003	.002	.002	<.001
Chromium	.010	.008	.005	.009	.006	.006	.004
Copper	.002	.007	.001	.002	.002	.001	.004
Lead	.052	.040	.025	.049	.028	.030	.020
Mercury	<.001	<.001	<.001	<.001	<.001	<.001	<.001
Nickel	.010	.007	.005	.011	.006	.006	.008
Selenium	<.005	<.005	<.005	<.005	<.005	<.005	<.005
Silver	<.001	<.001	<.001	<.001	<.001	<.001	.001
Thallium	<.005	<.005	<.005	<.005	<.005	<.005	<.005
Zinc	.026	.016	.017	.050	.011	.011	.047
Total Cyanide	.180	.058	.130	.930	.130	.040	.033
Total Phenol	.072	.013	.006	<.005	<.005	.030	<.005

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TABLE 1

Groundwater Analyses
Wacker Siltronic Corp.
Proposed Polysilicon Site
(Concentrations expressed in parts per million)

Volatile Organics (by GC/MS)	MW-1	MW-2	MW-3	MW-4	MW-5	MW-6	MW-7
Chloromethane	<.010	<.001	<.001	<.001	<.001	<.001	<.001
Bromomethane	<.010	<.001	<.001	<.001	<.001	<.001	<.001
Vinyl Chloride	<.010	<.001	<.001	<.001	<.001	<.001	<.001
Chloroethane	<.010	<.001	<.001	<.001	<.001	<.001	<.001
Methylene Chloride	.088	T	T	T	.021	T	T
Acrolein	<.100	<.001	<.010	<.010	<.010	<.010	<.010
Acetone	.120	<.001	<.001	.021	.049	<.001	<.001
Acrylonitrile	<.100	<.001	<.010	<.010	<.010	<.010	<.010
Carbon Disulfide	<.010	<.001	<.001	<.001	<.001	<.001	<.001
1,1-Dichloroethylene	<.010	<.001	<.001	<.001	<.001	<.001	<.001
1,1-Dichloroethane	<.010	<.001	<.001	<.001	<.001	<.001	<.001
trans-1,2-Dichloroethylene	<.010	<.001	<.001	<.001	<.001	<.001	<.001
Chloroform	<.010	<.001	<.001	<.001	<.001	<.001	<.001
2-Butanone	<.010	<.001	<.001	<.001	<.001	<.001	<.001
1,2-Dichloroethane	<.010	<.001	<.001	<.001	<.001	<.001	<.001
1,1,1-Trichloroethane	<.010	<.001	<.001	<.001	<.001	<.001	<.001
Vinyl Acetate	<.010	<.001	<.001	<.001	<.001	<.001	<.001
Bromodichloromethane	<.010	<.001	<.001	<.001	<.001	<.001	<.001
Carbon Tetrachloride	<.010	<.001	<.001	<.001	<.001	<.001	<.001
1,2-Dichloropropane	<.010	<.001	<.001	<.001	<.001	<.001	<.001
Trichloroethylene	<.010	<.001	<.001	<.001	<.001	<.001	<.001
Benzene	1.100	.100	.039	<.001	<.001	1.200	<.001
Chlorodibromomethane	<.010	<.001	<.001	<.001	<.001	<.001	<.001
1,1,2-Trichloroethane	<.010	<.001	<.001	<.001	<.001	<.001	<.001
2-Chloroethyl vinyl ether	<.010	<.001	<.001	<.001	<.001	<.001	<.001
Bromoform	<.010	<.001	<.001	<.001	<.001	<.001	<.001
4-Methyl-2-pentanone	<.010	<.001	<.001	<.001	<.001	<.001	<.001
2-Hexanone	<.010	<.001	<.001	<.001	<.001	<.001	<.001
1,1,2,2,-Tetrachloroethane	<.010	<.001	<.001	<.001	<.001	<.001	<.001

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TABLE 1

Groundwater Analyses
Wacker Siltronic Corp.
Proposed Polysilicon Site
(Concentrations expressed in parts per million)

Volatile Organics (Cont.)	MW-1	MW-2	MW-3	MW-4	MW-5	MW-66	MW-7
Tetrachloroethylene	<.010	<.001	<.001	<.001	<.001	<.001	<.001
Toluene	<.010	<.001	<.001	<.001	<.001	<.027	<.001
Chlorobenzene	<.010	<.001	<.001	<.001	<.001	<.001	<.001
trans-1,3-Dichloropropene	<.010	<.001	<.001	<.001	<.001	<.001	<.001
Ethylbenzene	.410	<.036	<.001	T	<.001	.390	<.001
cis1,3-Dichloropropene	<.010	<.001	<.001	<.001	<.001	<.001	<.001
Styrene	<.010	<.001	<.001	<.001	<.001	<.001	<.001
Total Xylenes	1.200	.032	T	.015	<.001	.430	<.001

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TABLE 1

Groundwater Analyses
Wacker Siltronic Corp
Proposed Polysilicon Site
(Concentrations expressed in parts per million)

Extractables (by GC/MS)	MW-1	MW-2	MW-3	MW-4	MW-5	MW-6	MW-7
N-nitrosodimethylamine	<.001	<.001	<.001	<.001	<.001	<.001	<.001
Bis(2-chloroethyl)ether	<.001	<.001	<.001	<.001	<.001	<.001	<.001
2-Chlorophenol	<.001	<.001	<.001	<.001	<.001	<.001	<.001
Phenol	T	<.001	<.001	<.001	<.001	<.001	<.001
1,3-Dichlorobenzene	<.001	<.001	<.001	<.001	<.001	<.001	<.001
1,4-Dichlorobenzene	<.001	<.001	<.001	<.001	<.001	<.001	<.001
1,2-Dichlorobenzene	<.001	<.001	<.001	<.001	<.001	<.001	<.001
Bis(2-chloroisopropyl)ether	<.001	<.001	<.001	<.001	<.001	<.001	<.001
Hexachloroethane	<.001	<.001	<.001	<.001	<.001	<.001	<.001
N-nitroso-di-n-propylamine	<.001	<.001	<.001	<.001	<.001	<.001	<.001
Nitrobenzene	<.001	<.001	<.001	<.001	<.001	<.001	<.001
Isophorone	<.001	<.001	<.001	<.001	<.001	<.001	<.001
2-Nitrophenol	<.001	<.001	<.001	<.001	<.001	<.001	<.001
2,4-Dimethylphenol	.027	<.001	<.001	<.001	<.001	<.001	<.001
Bis(2-chloroethoxy)methane	<.001	<.001	<.001	<.001	<.001	<.001	<.001
2,4-Dichlorophenol	<.001	<.001	<.001	<.001	<.001	<.001	<.001
,2,4-Trichlorobenzene	<.001	<.001	<.001	<.001	<.001	<.001	<.001
Naphthalene	<.001	1.900	.600	.350	.058	2.100	T
Hexachlorobutadiene	<.001	<.001	<.001	<.001	<.001	<.001	<.001
4-Chloro-m-cresol	<.001	<.001	<.001	<.001	<.001	<.001	<.001
Hexachlorocyclopentadiene	<.001	<.001	<.001	<.001	<.001	<.001	<.001
2,4,6-Trichlorophenol	<.001	<.001	<.001	<.001	<.001	<.001	<.001
2-Chloronaphthalene	<.001	<.001	<.001	<.001	<.001	<.001	<.001
Acenaphthylene	.088	.200	T	T	.031	.032	<.001
Dimethylphthalate	<.001	<.001	<.001	<.001	<.001	<.001	<.001
2,6-Dinitrotoluene	<.001	<.001	<.001	<.001	<.001	<.001	<.001
Acenaphthene	.270	.940	.086	.350	.054	.200	.019
2,4-Dinitrophenol	<.001	<.001	<.001	<.001	<.001	<.001	<.001

TABLE 1

Groundwater Analyses
Wacker Siltronic Corp.
Proposed Polysilicon Site
(Concentrations expressed in parts per million)

Extractables, (Cont.)	MW-1	MW-2	MW-3	MW-4	MW-5	MW-6	MW-7
2,4-Dinitrotoluene	<.001	<.001	<.001	<.001	<.001	<.001	<.001
4-Nitrophenol	<.001	<.001	<.001	<.001	<.001	<.001	<.001
Fluorene	.095	.440	.013	.053	.012	.035	<.001
4-Chlorophenyl phenyl ether	<.001	<.001	<.001	<.001	<.001	<.001	<.001
Diethylphthalate	<.001	<.001	<.001	<.001	<.001	<.001	<.001
4,6-Dinitro-o-cresol	<.001	<.001	<.001	<.001	<.001	<.001	<.001
1,2-diphenylhydrazine	<.001	<.001	<.001	<.001	<.001	<.001	<.001
4-Bromophenyl phenyl ether	<.001	<.001	<.001	<.001	<.001	<.001	<.001
Hexachlorobenzene	<.001	<.001	<.001	<.001	<.001	<.001	<.001
Pentachlorophenol	<.001	<.001	<.001	<.001	<.001	<.001	<.001
Phenanthrene	.180	1.630	.013	.028	.021	.056	T
Anthracene	.039	.630	T	T	T	T	<.001
Dibutylphthalate	<.001	<.001	<.001	<.001	<.001	<.001	<.001
Fluoranthene	.072	1.300	T	.018	T	T	.023
Pyrene	.081	1.430	T	.014	.010	.010	.011
Benzidine	<.001	<.001	<.001	<.001	<.001	<.001	<.001
Butyl benzyl phthalate	<.001	<.001	<.001	<.001	<.001	<.001	<.001
Benzo(a)anthracene	.031	.480	T	T	T	T	.012
Chrysene	.036	.650	T	T	T	T	.015
3,3'-Dichlorobenzidine	<.001	<.001	<.001	<.001	<.001	<.001	<.001
Bis(2-ethylhexyl)phthalate	T	.024	T	.013	T	T	T
N-nitrosodiphenylamine	<.001	<.001	<.001	<.001	<.001	<.001	<.001
Di-n-octyl phthalate	T	<.001	T	T	T	<.001	T
Benzo(b)fluoranthene	.024	.400	<.001	T	T	T	T
Benzo(k)fluoranthene	T	.120	<.001	<.001	<.001	T	T
Benzo(a)pyrene	.040	.760	T	T	T	T	.010
Indeno(1,2,3-cd)pyrene	.020	.300	<.001	T	T	T	T
Dibenzo(ah)anthracene	<.001	T	<.001	<.001	<.001	<.001	<.001

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TABLE 1

Groundwater Analyses
Wacker Siltronic Corp.
Proposed Polysilicon Site
(Concentrations expressed in parts per million)

Extractables, (Cont.)	MW-1	MW-2	MW-3	MW-4	MW-5	MW-6	MW-7
Benzo(ghi)perylene	.025	.370	<.001	T	T	T	T
Aniline	<.001	<.001	<.001	<.001	<.001	<.001	<.001
Benzoic Acid	<.001	<.001	<.001	<.001	<.001	<.001	<.001
Benzyl Alcohol	<.001	<.001	<.001	<.001	<.001	<.001	<.001
4-Chloroaniline	<.001	<.001	<.001	<.001	<.001	<.001	<.001
Dibenzofuran	.077	.075	T	.088	T	.014	T
2-Methylnaphthalene	<.001	.260	.067	.019	.012	.041	<.001
2-Methylphenol	<.001	<.001	<.001	<.001	<.001	<.001	<.001
4-Methylphenol	<.001	<.001	<.001	<.001	<.001	<.001	<.001
2-Nitroaniline	<.001	<.001	<.001	<.001	<.001	<.001	<.001
3-Nitroaniline	<.001	<.001	<.001	<.001	<.001	<.001	<.001
4-Nitroaniline	<.001	<.001	<.001	<.001	<.001	<.001	<.001
2,4,5-Trichlorophenol	<.001	<.001	<.001	<.001	<.001	<.001	<.001

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TABLE 1

Groundwater Analyses
Wacker Siltronic Corp.
Proposed Polysilicon Site
(Concentrations expressed in parts per million)

_esticides (by GC/ECD)	MW-1	MW-2	MW-3	MW-4	MW-5	MW-6	MW-7
alpha-BHC	<.0002	<.0002	<.00002	.00024	<.00002	.00006	<.00002
beta-BHC	<.0002	<.0002	<.00002	<.00002	<.00002	<.00002	<.00002
delta-BHC	<.0002	<.0002	<.00002	<.00002	<.00002	<.00002	<.00002
gamma-BHC (lindane)	<.0002	<.0002	<.00002	<.00002	<.00002	<.00002	<.00002
heptachlor	<.0002	<.0002	<.00002	<.00002	<.00002	<.00002	<.00002
aldrin	<.0002	<.0002	<.00002	<.00002	<.00002	<.00002	<.00002
heptachlor epoxide	<.0002	<.0002	<.00002	<.00002	<.00002	<.00002	<.00002
dieldrin	<.0002	<.0002	<.00002	<.00002	<.00002	<.00002	<.00002
4,4'-DDE	<.0002	<.0002	<.00002	<.00002	<.00002	<.00002	<.00002
4,4'-DDD	<.0004	<.0004	<.00004	<.00004	<.00004	<.00004	<.00004
endosulfan sulfate	<.0004	<.0004	<.00004	<.00004	<.00004	<.00004	<.00004
4,4'-DDT	<.0004	<.0004	<.00004	<.00004	<.00004	.00028	<.00004
chlordane	<.0004	<.0004	<.00004	<.00004	<.00004	<.00004	<.00004
alpha endosulfan	<.0004	<.0004	<.00004	<.00004	<.00004	<.00004	<.00004
eta endosulfan	<.0004	<.0004	<.00004	<.00004	<.00004	<.00004	<.00004
endrin	<.0004	<.0004	<.00004	<.00004	.00002	<.00004	<.00004
endrin aldehyde	<.0004	<.0004	<.00004	<.00004	<.00004	<.00004	<.00004
toxaphene	<.050	<.050	<.004	<.004	<.004	<.004	<.004
PCB 1016	<.010	<.010	<.001	<.001	<.001	<.001	<.001
PCB 1221	<.010	<.010	<.001	<.001	<.001	<.001	<.001
PCB 1232	<.010	<.010	<.001	<.001	<.001	<.001	<.001
PCB 1242	<.010	<.010	<.001	<.001	<.001	<.001	<.001
PCB 1248	<.010	<.010	<.001	<.001	<.001	<.001	<.001
PCB 1254	<.010	<.010	<.001	<.001	<.001	<.001	<.001
PCB 1260	<.010	<.010	<.001	<.001	<.001	<.001	<.001

Key

< indicates "less than"
Trace = 1-10 ug/L

TOOZE MARSHALL SHENKER HOLLOWAY & DUDEN
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333 S. W. TAYLOR STREET
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DAVID R. SIMON
MONTGOMERY W. COBB
NANCY R. GREENE
JOSEPH C. FREEMAN

ROBERT M. KERR
COUNSEL

LAMAR TOOZE
1895-1971

LAMAR TOOZE, JR.
1922-1985

ADMITTED IN OREGON
WASHINGTON* AND
CALIFORNIA**

September 25, 1986

Mr. Mark Urbassik
Koppers Company, Inc.
436 Seventh Avenue
1440 Koppers Building
Pittsburg, PA 15219

Re: Wacker-Siltronic Corporation/Northwest Natural Gas/
Koppers Company
Our File No: new

Dear Mark:

Attached please find the DEQ documents. After you have reviewed them, please call. The two DEQ personnel we should see are Janet Gillaspie and Larry Patterson.

Very truly yours,

CHARLES R. HOLLOWAY

CRH:ma

Enclosure

RECEIVED
OCT 1 1986
ENVIRONMENTAL RESOURCES

cc: HW
WQ
EPA-OOO

SRC

STOEL, RIVES, BOLEY, FRASER & WYSE
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WRITER'S DIRECT DIAL NUMBER

Dept. of Environmental Quality
RECEIVED
JUL 1? 1986
NORTHWEST REGION

July 14, 1986

Mr. Fred Hansen, Director
Department of Environmental Quality
522 SW Fifth Avenue
Portland, OR 97204

Dear Fred: Remedial action

Re: Wacker Siltronic/Northwest Natural Gas Company/Koppers Company

This will confirm my recent discussions with Janet Gillaspie to the effect that representatives of Northwest Natural Gas Company, Wacker Siltronic and Koppers Company have met to discuss a joint study of suspected contamination in the vicinity of the Wacker Siltronic plant.

At such time as the companies have agreed to an appropriate division of the work and related expenses, and have retained a consultant to prepare a study plan, we will let you know. At that time, we contemplate reviewing the proposed study plan with Ms. Gillaspie's staff.

We continue to appreciate the assistance and cooperation that you and your staff have provided in connection with this matter.

Very truly yours,

Dick

Richard D. Bach

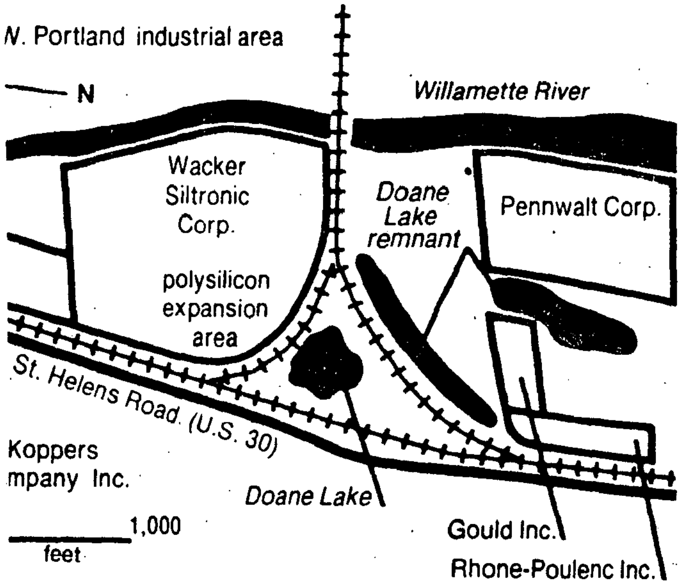
RDB:twa
cc: Ms. Janet Gillaspie
Bruce DeBolt, Esq.
Mr. Ed Bolin
Mr. Harry Schmid
Mr. James R. Ellis
Mr. John A. Oxford

6/25/85

nt deferment points to other problems

UAG

Toxic neighbors



se are the locations of some of the toxic chemical-handling com-
s near Wacker Siltronic Corp. in a riverside industrial area of North-
Portland. The companies are:
- Rhone-Poulenc Inc. Agrochemical Division, which until 3 years ago uced the herbicide 2,4-D and which now formulates the herbicide bro-mil octanoate.
- Pennwalt Corp., which makes chemicals including ammonia, caustic , hydrochloric acid and hydrogen gas.
- Koppers Company Inc. Organic Materials Division, which blends cre-, and
- Gould Inc. property that contains toxic lead-contaminated battery gs marked for cleanup under the federal Superfund program.

The Oregonian

amental Quality industrial engineer, said no standard directly to the concentration of soil. The federal permissible 2,4-D in drinking water is 100 r billion.

orities said the significance of arly figures was not clear they did not directly demon-ny contamination of ground water, which could carry the 2,4-D to living things.

Patterson said periodic checks of Willamette River water over the years showed no chemical seepage was reaching the river. The next step, he said, was to check for contamination of ground water.

Agency officials said it appeared the chemical was not a threat because of its depth and apparent lack of movement.

Janet A. Gillaspie, manager of the agency's northwest regional section, said her office would develop a plan with Wacker to determine accurate soil and water concentrations. She said a large-scale study should not be ruled out.

The Wacker neighborhood includes:

- Koppers Company Inc. Organic Materials Division, 7540 N.W. St. Helens Road, which blends coal tars into the popular wood-preservative, creosote.
- A fenced-off lot owned by Gould Inc., 5909 N.W. 61st Ave., which contains toxic lead-contaminated battery casings marked for cleanup under the federal Superfund program. Authorities in recent years have detected windblown lead dust in the area and pinpointed the 300-foot-long pile of battery casings as the source.
- Pennwalt Corp., 6400 N.W. Front Ave., which produces caustic soda, hydrochloric acid, ammonia, sodium chlorate and hydrogen gas. The company opened in 1941 as Pennsylvania Salt Manufacturing Company of Washington and initially manufactured only sodium chlorate.
- Rhone-Poulenc Agrochemical Division, 6200 N.W. St. Helens Road. Opened in 1943 as Chipman Chemical Co. and purchased in 1967 by Rhodia Co., which later changed its name to Rhone-Poulenc, the plant in past years has dealt with hydrochloric acid, sulfuric acid and chlorine. Although its only product for the last three years has been the herbicide bromoxynil octanoate, which is sold to farmers for use on fields of wheat and corn under the brand name "Buctril," DEQ records show the company started producing the herbicide 2,4-D in 1956. Records show the company handled quantities of 2,4,5-T for about two years in the late 1950s.

The Environmental Protection Agency in 1984 examined the Rhone-Poulenc site and found no dioxin contamination on or near the plant.

Parts of the company ditches and ponds had been saturated with chemicals in past years.

"Initially, process wastes along the storm runoff were discharged to the river directly or were discharged into Doane's Lake which discharges into the river," Gillaspie wrote in an April 5, 1983 interoffice memorandum. "In the mid-1960s the department received complaints from fishermen that salmon from the river near the plant were tainted with a chemical taste. That taste was chlorinated phenols."

Glen D. Carter, an aquatic biologist and an employee of the Oregon environmental agency since 1956, recalled his inspections of the old Chipman 2,4-D production plant.

"I'd get a splitting headache after about a half hour," he said. "The smell would saturate your clothes. You'd get home after work, your wife wouldn't let you in. She'd say leave your clothes outside."

Harry and Verna Butcher, both now 76, drew a financial settlement out of court from the Rhodia Co. after alleging that Verna Butcher experienced serious health problems when the wind blew Rhodia's emissions toward their home 10 miles away.

Michael Watson, a toxicologist with the regional EPA office in Seattle, said 2,4-D posed no exceptional threats to human health with proper use. He said questions remained about whether it caused birth defects in animal experiments with high doses. He said the mainstream scientific community did not consider it a cancer-causing agent.

Donald Meyer, production manager for the Rhone-Poulenc plant in Portland, emphasized that Rhone-Poulenc was complying with a DEQ directive to keep Doane Lake remnants free of contamination.

Meanwhile, Wacker and the DEQ are trying to figure the risks and costs of leftover poisons.

"The lesson is that what we in the past thought was not a problem, can turn out to be a problem," said the environmental agency's director, Frederic J. Hansen. "It's always harder to clean it up later."

Koppers021720

file wacker Remedial action

Clean

STATE OF OREGON

DEPARTMENT OF ENVIRONMENTAL QUALITY

INTEROFFICE MEMO

TO: Governor Vic Atiyeh

DATE: June 19, 1985

FROM: Fred Hansen

SUBJECT: History of the Doane's Lake Industrial District (Wacker Siltronics Site)

BACKGROUND

The industrial portion of northwest Portland was once two lakes: Doane's Lake to the north, and Guild's Lake to the south. These areas have been filled with a mixture of dredge sands and muds from the Willamette River and industrial wastes. The area has been heavily industrialized for nearly the past 100 years. Activities now regulated by DEQ, including waste water discharges, surface and groundwater pollution problems, air pollution discharges, and landfilling of industrial solid and hazardous waste have all occurred in the area, prior to regulation. In addition, sediment from the Willamette could have concentrated the more toxic elements of the industrial discharges.

WACKER NEIGHBORHOOD

In 1976, Wacker Siltronic purchased 85 acres in the Doane's Lake District. The site is adjacent to the SP & S Railroad Bridge, and is bordered on the east by the Willamette River, west by Highway 30, and north by Kopper's and Northwest Natural Gas. Within 1/2 mile of the plant are various industrial plants, including Gould Battery, Pennwalt, Rhone-Poulenc, and an ESCO landfill. All of these have potential pollution problems associated with them.

KOPPER'S

Koppers constructed a plant to make coal tar pitch for the aluminum industry in 1966. This process ceased operation in 1973. Since then, the facility has been used for blending creosote and pentachlorophenol solutions.

NORTHWEST NATURAL GAS

This facility adjacent to Northwest St. Helens Road was a coal gasification plant which operated in the late 1800's. The bottoms from the manufacturing of oil gas were landfilled on site, on the Kopper's site and on the Wacker site. The plant closed in the 1950's.

PENNWALT

Pennwalt manufactures chlorine at its facility located between First Avenue and the Willamette River. The plant was built during World War II. The majority of discharges have been to the Willamette River. Discharges would have been caustic and acidic and included traces of some metals.

ESCO

ESCO has a landfill between Rhone-Poulenc and Gould where casting sands have been disposed of. These sands include some naturally-occurring radioactive isotopes, along with phenolic resins used as a binder. The concentration of naturally-occurring radioactive isotopes is below the state definition of radioactive materials.

GOULD BATTERY

Gould Battery presently owns a former battery manufacturing facility between Highway 30 and Front Avenue. The company purchased the property in 1979. About 10,000 tons of old battery casings remain on the property. The batteries contain lead oxide which can be both an air and water pollution problem. In 1980, the Gould battery site was listed as one of the two Oregon Superfund sites. An attempt to recycle the useful portions of the battery casings has failed, and EPA and the company are now working to reach agreement on a cleanup program.

RHONE-POULENC

Rhone-Poulenc owns and operates a pesticide company located adjacent to Northwest St. Helens Road. The company was earlier operated as Rhodia Chemical Company, and Chipman Chemical.

The groundwater around the plant is contaminated with pesticides. This contamination occurred over a long period of time due to product loss from spills and leaking tanks and lines.

The company has completed a very detailed, several year study of the groundwater in the area. Based on that information, the company is on a long-term cleanup program which requires pumping the groundwater from beneath the plant and treating it prior to discharge to the Willamette River.

SUMMARY

The Doane's Lake district is a very industrialized area with associated pollution problems. Until Wacker Siltronic and its consultants CH_2M Hill share their data on the soil analysis which prompted the delay of the poly plant with the Department, we are unable to know if the concentrations of chemicals in the soils are above what would be expected. All of the chemicals which are known to have been found in the testing to date can be associated with Wacker's neighboring industries.

The steps to resolving the problem include additional sampling to determine the extent of the problem, and then evaluating various cleanup alternatives. The cleanup alternatives could range from leaving the material in place to removing it to a chemical landfill.

We will continue to work with Wacker to determine the extent of the pollution problems in their property, and to resolve those problems expeditiously. I will keep you informed.

FH:y
RY561

STATE OF OREGON

INTEROFFICE MEMO

Wacker
past practice
Mult.

TO: FRED HANSEN LARRY PATTERSON
MIKE DOWNS

DATE: June 18, 1986

FROM: JAGILLASPIE THROUGH TMBOLTON

SUBJECT: Past practice Investigation - Northern Doane's Lake

Dick Bach called today from Stoel, Rives, Boely. He is representing Northwest Natural Gas in the past practice investigation in Northern Doane's Lake. The Gas Company is very willing to undertake an investigation of the area.

The Gas Company will be sitting down with Wacker, and hopefully Koppers soon to discuss the project. They will then hire a consultant and request a meeting with us to review the general aspects of the study. The consultant will then prepare a study plan, which the Department will review and comment on.

Dick envisions this being a very similar project to the investigation he assisted Pacific Power & Light in connection with its Astoria Service Center.

At this time, Dick would prefer that we wait until we hear from them on setting a meeting to review the issues. I said we would be getting a technical team together to oversee the project.

Northwest Natural has two areas of concern. One, how extensively were the tar ponds moved around when the now-Wacker property was filled, and two, what other pollutants might be in the area from other facilities such as Rhone-Poulenc or Gould. I explained the current status of both Rhone-Poulenc and Gould.

JAG/dlr

State of Oregon
DEPARTMENT OF ENVIRONMENTAL QUALITY

INTEROFFICE MEMO

To: Fred Hansen

Date: 9 June 86

From: Larry Patterson
JAGillaspie

Subject: Wacker Siltronics

PAST PRACTICE INVESTIGATION

The programs (Water Quality and Hazardous & Solid WAste) and the region need to meet to outline exactly what technical questions need to be answered in conducting the past practice investigation. We will then request the three parties currently in the area - - Wacker, Koppers, and Northwest Natural Gas - - to undertake a study to address those areas.

Northwest Natural Gas recently contacted the Region for an update on the investigation. After learning of the status, they indicated they wanted to cooperate in the project.

EXPANSION OF THE POLY PLANT

A review of the available information, and discussions with the company indicate that it is very possible the poly plant could be expanded in the area the company has planned. The historical information available shows that the majority of the tar filling did not occur in the upper (toward St. Helens Road) part of the property. The past practice investigation would need to continue throughout the property.

The best approach may be to request that the Wacker engineering staff contact either of us to evaluate the building of the poly plant on site. We would need to evaluate any information Wacker may have about the historical use of the site, along with detailed information on how the building would be constructed, but it appears possible to accommodate both the poly plant and gather additional information at the same time.

file:

A PRELIMINARY REPORT
SOIL INVESTIGATION FOR PROPOSED POLYSILICON PLANT

~~WACKER SILTRONIC~~ CORPORATION
PORTLAND, OREGON

past practices (new file)

Prepared By

CH2M HILL NORTHWEST, INC.
2020 S.W. Fourth Avenue
Portland, Oregon 97201

Dept. of Environmental Quality
RECEIVED
JUL 24 1985
NORTHWEST REGION

JUNE 1985
P19786.A1.00

INTRODUCTION

Wacker Siltronic Corporation contracted CH2M HILL to conduct a soil investigation on Wacker's property located in the Northwest Industrial area of Portland, Oregon. The purpose of the investigation was to evaluate subsurface conditions within a section of the vacant portion of the site as part of the preliminary engineering for the design and construction of the proposed polysilicon plant.

The subsurface investigation was initiated based on the presence (both past and current) of industrial manufacturing and processing facilities within the Doane Lake area and recent environmental regulations--the Comprehensive Environmental Response, Compensation, and Liability Act of 1980 (CERCLA) and the Resource Conservation and Recovery Act of 1976 (RCRA). Wacker was concerned that past or current management practices of industrial wastes within the Doane Lake area may have resulted in the presence of these materials or subsequent residues on Wacker's property, which would prevent or hinder the construction of the proposed polysilicon plant and future expansions of the existing manufacturing facilities.

This preliminary report describes the soil boring, sampling, and analytical procedures and construction of the groundwater monitoring wells. It also presents the results of the laboratory analyses, which indicate the presence of chemical constituents commonly associated with petroleum products, coal tar, and pesticides. Interpretation of the results presented in this report is beyond the scope of our contract and will be included as part of future work (i.e., site environmental assessment).

Koppers021727

SITE DESCRIPTION

Wacker Siltronic Corporation is located in the northwest section of the City of Portland on the west bank of the Willamette River. The property, consisting of approximately 85 acres, is situated between the St. Johns Bridge and the Burlington Northern Railroad Bridge and is essentially rectangular in shape. Property boundaries are the Willamette River to the northeast; the Burlington Northern Railroad berm, which provides the approach to the railroad bridge, to the southwest; Burlington Northern track and adjacent N.W. St. Helens Road to the southwest; and the property line shared with Northwest Natural Gas and the Koppers Company to the northwest. Figure 1 shows the location of the Wacker property in relation to these landmarks and other industrial companies in the vicinity.

The project site is located in a vacant field about 400 feet south of Wacker's existing facilities, as shown in Figure 2. The site is bounded on the north by the existing Wacker plant, and is bordered on the south and east by Burlington Northern Railroad right-of-way. Underground utilities, consisting of oil, water, gasoline, natural gas, and sewer lines, as well as electric and telephone cables, are located in a 100-foot-wide easement on the north side of the site.

The site is relatively level with elevations ranging from about 40 feet National Geodetic Vertical Datum 1929 (NGVD) in the southern part to about 32 feet in the northern part. The local ground surface is deeply rutted with heavy machinery tracks and ditches. Wood debris, concrete, and other waste materials are present in small amounts across the field.

FIELD INVESTIGATION

The field investigation was performed from April 1 through 5, 8 and 9, 1985. The investigation involved collecting soil

Koppers021728

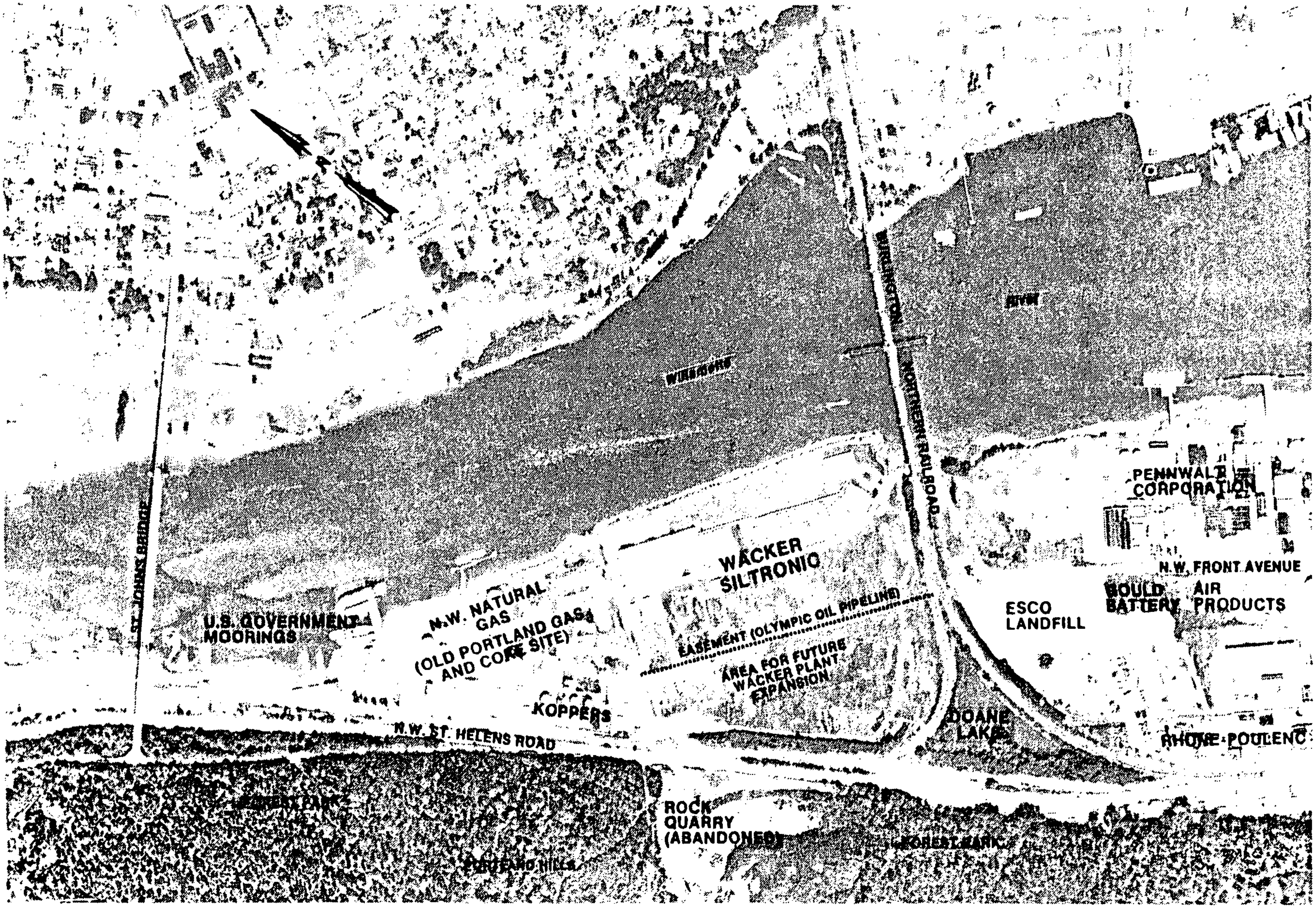


Figure 1 WACKER SILTRONIC PLANT AND SURROUNDING VICINITY (1983)

SCALE: 1" = 940 FEET (1 cm : 110 m)

Koppers021729

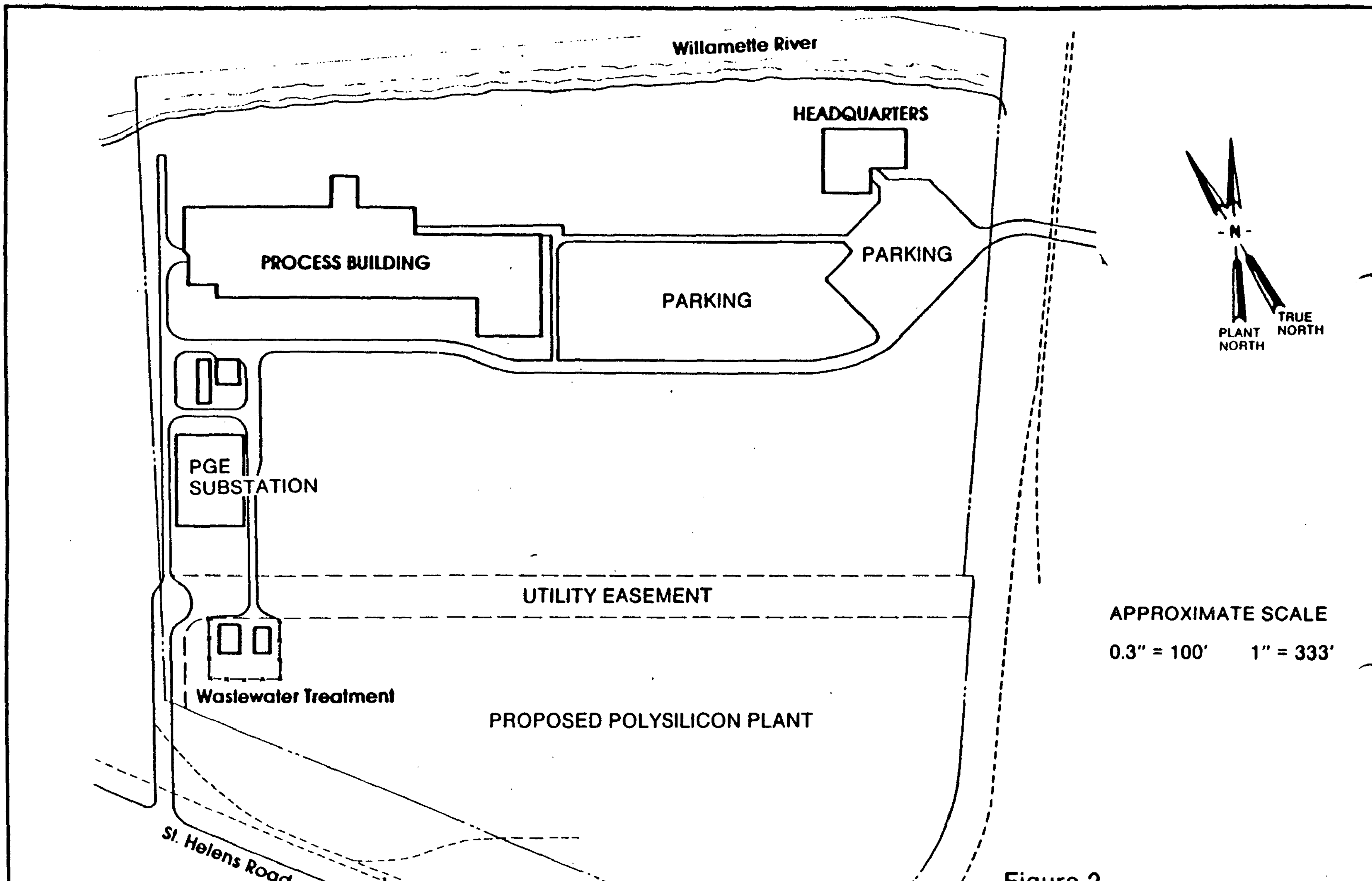


Figure 2
WACKER PLANT SITE LOCATION PROPOSED POLYSILICON PLANT WACKER SILTRONIC CORPORATION PORTLAND, OREGON

CH2M HILL

Koppers021730

samples from seven soil borings, all of which were completed as monitoring wells. The locations of the borings/monitoring wells (designated MW-1 through MW-7) are shown in Figure 3. The soil borings were drilled and monitoring wells constructed by Geotech Explorations, Inc., of Beaverton, Oregon, under the field observation of a CH2M HILL hydrogeologist.

SOIL BORING AND SAMPLING

The seven soil borings were drilled using a CME-55 rotary drill rig and 6¼-inch (OD) hollow-stem augers. Soil samples were recovered at 5-foot intervals. Samples were recovered using a 2-inch split-spoon sampler following the requirements of the standard Penetration Test (ASTM D 1586). The sampler was driven 18 inches ahead of the auger bit to collect an undisturbed soil sample. The depth of soil borings ranged from 31.5 to 41.5 feet, generally between 5 and 20 feet below fill material and into native soils. The CH2M HILL hydrogeologist inspected, classified, and logged each borehole and soil sample in the field in approximate accordance with the Visual-Manual Procedure (ASTM D 2488). The log included a physical description of the soil type and a visual and odor estimate for the presence of contaminants. Sample intervals, soil types, and descriptions of the soil types and soil borings are provided in the soil boring record drawings presented in the appendix.

A composite soil sample from each split-spoon was placed in a clean 8-ounce glass jar. Each jar was filled to the top before it was sealed. The label that had been affixed to the sample container was then filled out. Information on the label included the facility name, the sample identification number, the name of the person collecting the sample, date and time of collection, and the location of the sample. The sample was then placed in a portable cooler until the end of each day when it was transferred via chain-of-custody record

Koppers021731

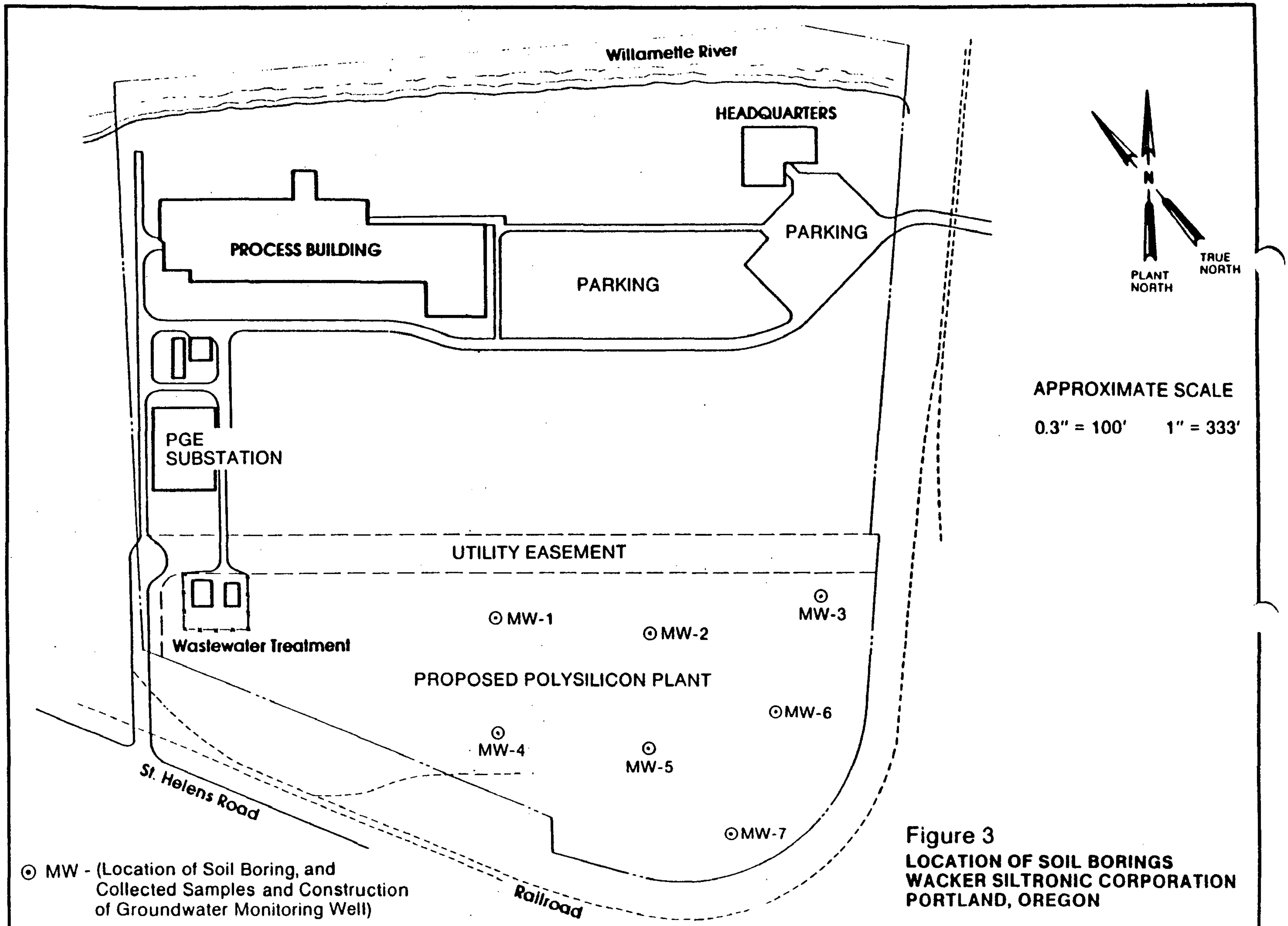


Figure 3
LOCATION OF SOIL BORINGS
WACKER SILTRONIC CORPORATION
PORTLAND, OREGON

CH2M HILL

Koppers021732

to a refrigerator located inside the laboratory area of Wacker's wastewater treatment building. Chain-of-custody records were kept for every sample collected. Sample custody was maintained until the samples were relinquished directly to Wacker or an outside laboratory. A sample of the chain-of-custody form used is illustrated in the appendix.

All drilling equipment was thoroughly steam-cleaned before drilling each boring. Oil and grease were not used at drill rod connection fittings to prevent contamination of the soil samples. The split-spoon soil sampler was decontaminated between each use. Decontamination steps included:

- Washing off grass, soil particles, mud smears, etc., in a bucket of tap water
- Washing in a 5 to 10 percent solution of trisodium phosphate (TSP) and tap water
- Two rinses in clean tap water
- One rinse each with distilled water and methanol

The same decontamination procedures were used for the stainless steel utensils used to transfer soil from the sampler to the jars. Utensils were stored in a new plastic bag until they were ready for use.

A number of quality control measures were performed in order to ensure that all data generated was of known precision, and accuracy and conformed to accepted procedures. Soil sample splits were collected at soil boring sites MW-2, -5, and -6. Several transfer blanks were also prepared to check for potential contamination of sample jars. Samples of water poured into the drill holes to hold back heaving sands were also collected.

Koppers021733

GROUNDWATER MONITORING WELL CONSTRUCTION

Seven groundwater monitoring wells were constructed by installing well screen casing assemblies into the completed drill holes.

Each assembly consisted of 2-inch diameter schedule 40 PVC. Well screens consisted of a 15-foot length of PVC with three rows of 0.010-inch machine-slotted openings. A 5-foot solid PVC sump was placed beneath each screen. Solid PVC casing was placed above the screen and extended to the ground surface. Casing lengths were connected by flush-threaded fittings; no solvents were used to connect PVC sections.

Each well screen interval was gravel-packed by pouring a coarse-grained sand into the annular space between the PVC and the hollow stem of the auger. As the auger was pulled up, the sand dropped out of the hollow stem into the well to envelop the well screen. After the sand pack was installed to 2 or 3 feet above the top of the well screen, the annular space between the PVC casing and the hollow stem was filled with 1 to 2 feet of pelletized bentonite followed by cement grout to the ground surface. A summary of the construction of each well is provided in the soil boring record drawings presented in the appendix.

Well heads were completed at approximately 2 feet above the ground surface with locking steel caps that were anchored 2 to 3 feet into the cement grout mixture. The monitoring wells were developed by the drilling contractor by blowing compressed air through an air line into the sump (tail pipe) located below the well screen. Development was considered complete when the return water became visibly less turbid. The PVC monitoring well assembly was thoroughly steam-cleaned before construction of each well. As a measure of additional quality assurance and control, samples of the sand filter pack material used for well construction were collected and saved.

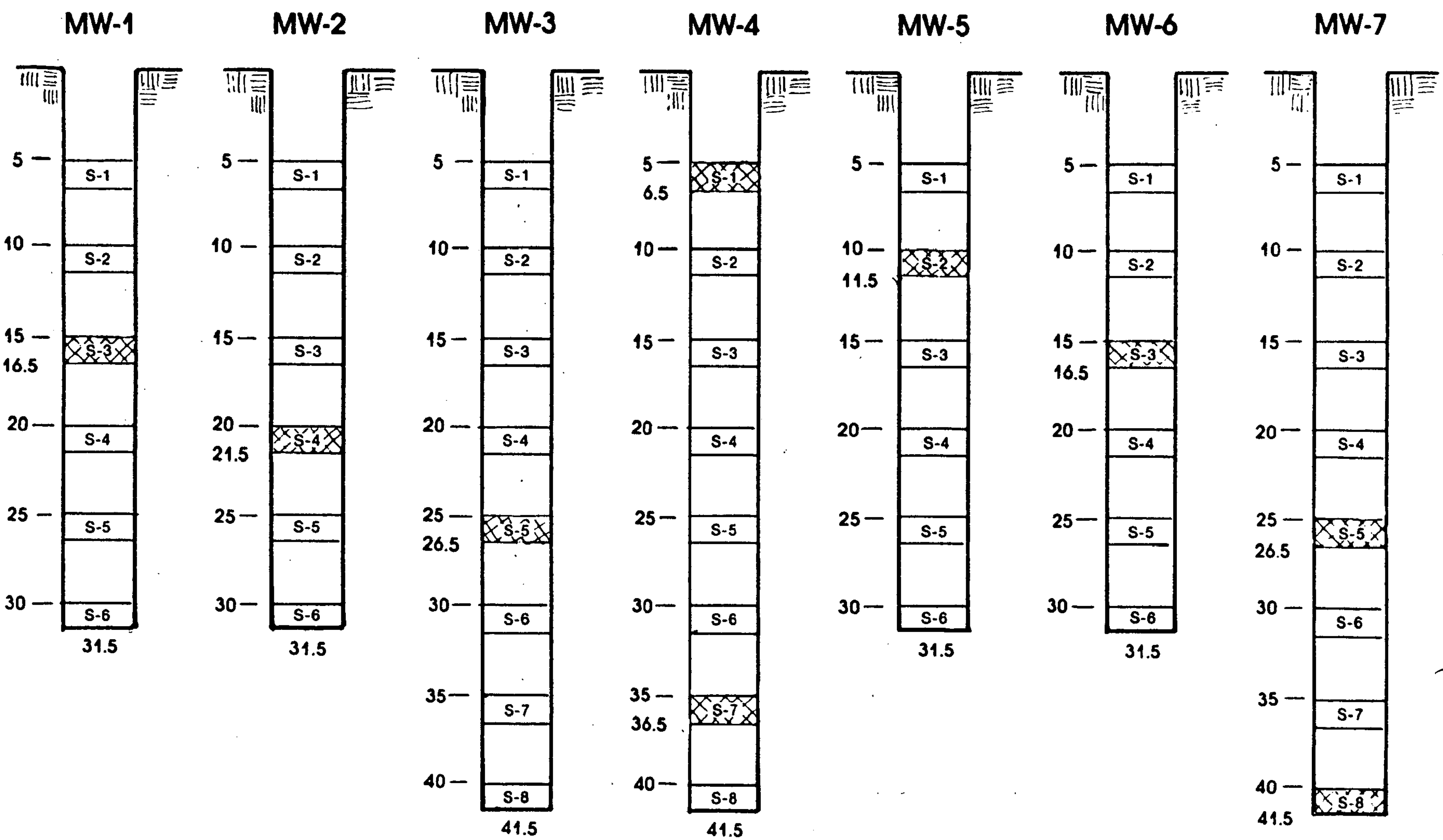
LABORATORY ANALYSIS AND SOIL SAMPLE RESULTS

The field sample description generally provided the basis for selecting samples to be sent to the laboratory for chemical analysis. Samples in which contaminants were most apparent visually and by odor were selected for analysis. Also, at least one soil sample from each soil boring site was analyzed, as was at least one sample at every 5-foot depth (except at 30 feet) from the combination of all soil boring locations. Figure 4 shows the approximate vertical location of the collected soil samples for each monitoring well and identifies which samples were analyzed.

The selection of the chemical analyses to be performed on each soil sample was based on the past and current industrial chemical manufacturing and handling activities within the Doane Lake area (i.e., petroleum products, coal tar, creosote, pesticides, battery recycling, foundry process waste disposal). The following chemical analyses were performed on the selected soil samples by Coffey Laboratories, Inc. (located at 4914 N.E. 122nd Avenue, Portland, Oregon):

- Oil and grease
- Phenols
- Volatiles and polynuclear aromatic hydrocarbons
- E.P. toxicity for:

  --pesticides
  --herbicides
  --arsenic
  --barium
  --cadmium
  --chromium
  --lead
  --mercury
  --selenium
  --silver



Analyzed Collected Soil Samples

(NOTE: Parallel lines denote soil samples. These were taken at 1.5 ft intervals starting every five feet)

Figure 4
GENERAL VERTICAL LOCATION COLLECTED SOIL SAMPLES WACKER SILTRONIC CORPORATION PORTLAND, OREGON

CH2M HILL

Koppers021736

The results of the laboratory analysis are presented in Table 1. A copy of the Coffey Laboratories, Inc., report is included in the appendix.

The field samples were analyzed for phenols, pesticides, herbicides, metals, volatiles, and aromatic hydrocarbons by EPA methods (SW-846, EPA-602, 4-79-020); the oils and grease were measured by standard methods (method 503 D).

Laboratory quality assurance procedures included method blanks, duplicates for precision measurements, and spikes for accuracy measurements. The frequency of blank, duplicate, and spike measurements was at a minimum of 10 percent per set to meet the standard requirements. The data were evaluated in view of the QC findings and found acceptable.

A review of the laboratory analysis indicates that each soil boring location contained a mixture of substances commonly associated with petroleum products, coal tar, and pesticides. The following list summarizes the principal substances found in each of the seven borings:

- MW-1 PAHs, petroleum products
- MW-2 PAHs, petroleum products
- MW-3 petroleum products
- MW-4 petroleum products
- MW-5 PAHs, petroleum products, 2,4-D
- MW-6 petroleum products, 2,4-D
- MW-7 petroleum products

Interpretation of results presented in Table 1 is beyond the scope of this report and will be included as part of future work (i.e., site environmental assessment).

Koppers021737

Table 1
WACKER SILTRONIC, POLYSILICON PLANT SOILS INVESTIGATION
SOURCE: COFFEY LABORATORIES, INC./APRIL 30, 1985
RESULTS OF SOILS ANALYSIS

Chemical Compounds	MW-1, S-3 (15-16.5 ft)	MW-2, S-4 (20-21.5 ft)	MW-3, S-5 (25-26.5 ft)	MW-4, S-1 (5-6.5 ft)	MW-4, S-7 (35-36.5 ft)	MW-5, S-2 (10-11.5 ft)	MW-6, S-3 (15-16.5 ft)	MW-7, S-5 (25-26.5 ft)	MW-7, S-8 (40-41.5 ft)	Detection Limits	Reference Criteria
Organic Analyses											
o Volatile Compounds											
1,1,1-Trichloroethane	0.01	BD	BD	BD	BD	BD	BD	BD	BD	0.01	pp, PDW (*)
1,2-Dichloroethane	BD	BD	BD	BD	BD	BD	BD	BD	BD	0.01	pp, PDW (*)
1,1,2,2-Tetrachloroethylene	2.2	11	BD	BD	BD	0.14	BD	BD	BD	0.05	
Toluene	1.2	20	0.11	BD	BD	0.20	BD	BD	BD	0.1	pp
Chlorobenzene	0.04	BD	BD	BD	BD	BD	BD	BD	BD	0.04	pp
Ethyl Benzene	17	5.4	BD	BD	BD	BD	BD	BD	0.05	0.04	pp
Xylene	146	116	BD	BD	BD	1.5	BD	2.8	1.2	1.0	
o Acid Extractables											
Phenol	0.35	3.1	0.20	0.30	0.17	0.07	0.05	0.06	0.08	NR	pp, SWQ
2-Chlorophenol	ND	7.8	0.08	0.26	ND	ND	0.13	ND	0.14	NR	pp, SWQ
2-Nitrophenol	ND	0.20	ND	ND	ND	ND	ND	ND	ND	NR	pp, SWQ
2,4-Dimethylphenol	ND	3.1	ND	ND	ND	0.22	0.17	ND	ND	NR	pp, SWQ
2,4-Dichlorophenol	ND	2.7	ND	ND	ND	0.24	ND	ND	ND	NR	pp, SWQ
2,4,6-Trichlorophenol	ND	ND	ND	ND	ND	0.22	ND	ND	ND	NR	pp, SWQ
2,4-Dinitrophenol	ND	ND	ND	ND	ND	0.81	ND	ND	ND	NR	pp, SWQ
Pentachlorophenol	ND	ND	ND	ND	0.31	6.9	5.1	ND	ND	NR	pp,SWQ,SHW
o Base Neutral Extractables											
Naphthalene	6.7	360	BD	BD	BD	230	BD	BD	BD	1	pp
Acenaphthalene	5.6	230	BD	BD	BD	24	BD	BD	BD	1	pp
Acenaphthene	8.0	560	BD	BD	BD	28	BD	BD	BD	1	pp
Fluorene	5.0	290	BD	BD	BD	20	BD	BD	BD	1	pp
Phenanthrine-Anthracene (***)	32	1,400	3	BD	BD	150	BD	1.6	BD	1	pp
Fluoranthene	16	530	BD	BD	BD	50	BD	1.1	BD	1	pp
Pyrene	18	550	BD	BD	BD	57	BD	1.2	BD	1	pp
Chrysene	12	92	BD	BD	BD	36	BD	1.7	BD	1	pp
Benzo (b) + Benzo (k) Fluoranthene (***)	8	120	BD	BD	BD	200	BD	BD	BD	1	pp
Benzo (a) pyrene	19	120	BD	BD	BD	100	BD	BD	BD	1	pp
Indeno (1,2,3-CD) Pyrene + Dibenzo (a,b) Anthracene (***)	BD	270	BD	BD	BD	7	BD	BD	BD	1	
Benzo (ghi) Perylene	BD	360	BD	BD	BD	25	BD	BD	BD	1	pp
o Pesticides (EP Toxicity)											
Gamma BHC (Lindane)	BD	BD	BD	BD	BD	BD	BD	BD	BD	0.04	pp, SHW, PDW
Endrin	BD	BD	BD	BD	BD	BD	BD	BD	BD	0.002	pp
Toxaphene	BD	BD	BD	BD	BD	BD	BD	BD	BD	0.05	pp

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Table 1 (Continued)

Chemical Compounds	MW-1, S-3 (15-16.5 ft)	MW-2, S-4 (20-21.5 ft)	MW-3, S-5 (25-26.5 ft)	MW-4, S-1 (5-6.5 ft)	MW-4, S-7 (35-36.5 ft)	MW-5, S-2 (10-11.5 ft)	MW-6, S-3 (15-16.5 ft)	MW-7, S-5 (25-26.5 ft)	MW-7, S-8 (40-41.5 ft)	Detection Limits	Reference Criteria
Inorganic Analyses (EP Toxicity)											
Arsenic	BD	BD	BD	BD	BD	BD	BD	BD	BD	0.05	pp,SHW,SWQ,PDW
Barium	0.05	0.11	0.05	0.09	BD	0.05	0.11	0.08	0.15	0.05	SHW, SWQ
Cadmium	BD	BD	BD	BD	BD	BD	BD	BD	BD	0.05	pp,SHW,SWQ,PDW
Chromium	BD	BD	BD	BD	BD	BD	BD	BD	BD	0.05	pp,SHW,SWQ,PDW
Lead	BD	BD	BD	BD	BD	BD	BD	BD	BD	0.05	pp,SHW,SWQ,PDW
Mercury	BD	BD	BD	BD	BD	BD	BD	BD	BD	0.05	pp,SHW,PDW
Selenium	BD	BD	BD	BD	BD	BD	BD	BD	BD	0.05	pp,SHW,PDW
Silver	BD	BD	BD	BD	BD	BD	BD	BD	BD	0.05	pp,SHW,PDW
Miscellaneous Analysis											
o non-PP Phenols/Cresols											
3 & 4-Chlorophenol	0.44	17.5	0.06	ND	ND	1.7	0.32	ND	ND	NR	SHW, SWQ
2,4,5-Trichlorophenol	ND	1.9	ND	ND	ND	ND	ND	ND	ND	NR	SHW, SWQ
2,3,4,5-Tetrachlorophenol	4.9	256	ND	0.40	ND	0.23	4.7	0.06	0.25	NR	SHW, SWQ
2,3,4,6-Tetrachlorophenol	0.24	ND	ND	ND	ND	ND	ND	1.0	ND	NR	SHW, SWQ
2,3,5,6-Tetrachlorophenol	ND	4.0	ND	0.58	0.11	0.33	0.55	ND	0.46	NR	SHW, SWQ
o-Cresol	0.04	3.4	ND	0.02	ND	0.19	0.05	ND	ND	NR	
m- and p-Cresol (***)	0.006	ND	ND	0.08	ND	ND	ND	ND	ND	NR	
o Non-PP Pesticides (EP Toxicity)											
Methoxychlor	BD	BD	BD	BD	BD	BD	BD	BD	BD	0.1	SHW, PDW
2,4-D	BD	BD	BD	BD	BD	10.0	160.0	BD	BD	10	SHW, PDW
2,4,5-TP (Silvex)	BD	BD	BD	BD	BD	BD	BD	BD	BD	1	SHW, PDW
o Misc. Constituents/Parameters											
Oil and Grease	0.340%	0.1498%	0.0587%	0.914%	0.0304%	0.190%	0.0539%	0.0650%	0.0586%		

Unless otherwise specified, all units are mg/kg (mg/L).
pp Priority Pollutant
PDW National Interim Primary Drinking Water Regulations
PDW(*) Proposed N.I.P.D.W.R.
SHW State of Oregon Hazardous Waste Administrative Rules
SWQ State of Oregon Water Quality Administrative Rules
BD Parameter detected, but below analytical quantification limits.
ND Analyzed, but not detected.
NR Not reported.
(***) Reported as sum of two compounds.

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CH2M HILL

PROJECT NUMBER	BORING NUMBER	SHEET
P19436.A2	MW-1	SHEET 1 OF 2

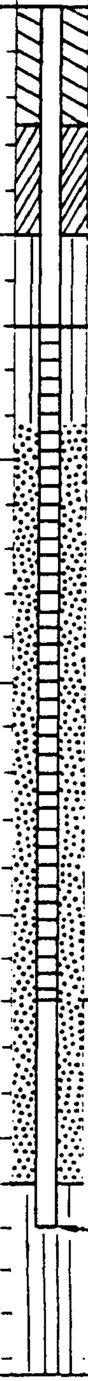
SOIL BORING RECORD DRAWING

PROJECT WACKER SILTRONIC CORPORATION LOCATION PORTLAND, OREGON

ELEVATION ______ DRILLING CONTRACTOR GEOTECH EXPLORATIONS, BEAVERTON, OREGON

DRILLING METHOD AND EQUIPMENT CME-55, 6" HS AUGERS

WATER LEVEL AND DATE ______ START ______ FINISH ______ LOGGER ______

ELEVATION	DEPTH BELOW SURFACE (FT.)	SAMPLE INTERVAL	SAMPLE TYPE AND NUMBER	SAMPLE RECOVERY	STANDARD PENETRATION TEST RESULTS 6"-6"-6" (N)	SOIL DESCRIPTION NAME, GRADATION OR PLASTICITY PARTICLE SIZE DISTRIBUTION, COLOR MOISTURE CONTENT, RELATIVE DENSITY OR CONSISTENCY, SOIL STRUCTURE MINERALOGY, USCS GROUP SYMBOL	SYMBOLIC LOG	COMMENTS DEPTH OF CASING, DRILLING RATE, DRILLING FLUID LOSS, TESTS AND INSTRUMENTATION
								Grout to surface Top of bentonite at 2 1/2"
	5	5.0 – 6.5	S-1	18	1-1-1 (2)	SILT, low plasticity, medium gray with brown mottling, moist, soft (ML), fill.		Top of gravel at 5' Screen top at 7' Driller notes water at ±9';
	10	10.0 – 11.5	S-2	0	4-4-5 (9)	Upper 10" - SILT, same as S-1, some hydrocarbon odor (Jar 1 of 2), fill. Lower 8" - SAND, poorly graded, fine sand, dark gray, wet compact (SP), heavily saturated with oil, strong odor (Jar 2 of 2), fill.		Prominent oily sheen and odor to cuttings between 10' and 15'
	15	15.0 – 16.5	S-3	18	3-4-5 (9)	SAND, poorly graded, fine sand, dark gray, wet, compact (SP), heavily saturated with oil, fill.		
	20	20.0 – 21.5	S-4	18	4-3-4 (7)	SAND, same as S-3, heavily saturated with oil, fill.		Screen bottom at 22' Driller notes 3 feet of heave at 25', had to wash out hole to clean out heave
	25	25.0 – 26.5	S-5	18	3-3-4	Upper 14" - SAND as in S-3 (SP), mild hydrocarbon odor, probably is slough from washing out heave and not representative. Lower 4" - SILT, low plasticity, medium brownish gray, moist, firm (ML), no noticeable hydrocarbon odor, probably native soil.		Fill Native ±21' Sump bottom at 27'

CH2M HILL

PROJECT NUMBER	BORING NUMBER	
P19436.A2	MW-(	SHEET 2 OF 2

SOIL BORING RECORD DRAWING

PROJECT WACKER SILTRONIC CORPORATION LOCATION PORTLAND, OREGON

ELEVATION ______ DRILLING CONTRACTOR GEOTECH EXPLORATIONS, BEAVERTON, OREGON

DRILLING METHOD AND EQUIPMENT CME-55, 6" HS AUGERS

WATER LEVEL AND DATE ______ START ______ FINISH ______ LOGGER ______

ELEVATION	DEPTH BELOW SURFACE (FT.)	SAMPLE: INTERVAL	SAMPLE: TYPE AND NUMBER	SAMPLE: RECOVERY	STANDARD PENETRATION TEST RESULTS 6"-6"-6" (N)	SOIL DESCRIPTION: NAME, GRADATION OR PLASTICITY, PARTICLE SIZE DISTRIBUTION, COLOR, MOISTURE CONTENT, RELATIVE DENSITY OR CONSISTENCY, SOIL STRUCTURE, MINERALOGY, USCS GROUP SYMBOL	SYMBOLIC LOG	COMMENTS: DEPTH OF CASING, DRILLING RATE, DRILLING FLUID LOSS, TESTS AND INSTRUMENTATION
	30	30.0 31.5	S-6	18	4-4-5 (9)	**SILT, low plasticity, medium brownish gray, moist to wet, includes some sandy silt in upper 6", firm (ML), no noticeable hydrocarbon odor, native soil.**		**Bottom gravel at 31.5'**
						END MW at 31.5 feet.		
								Worst samples **S-2, Jar 2 of 2 and S-3 are equally bad, more sample in S-3 for testing.**

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CH2M HILL

PROJECT NUMBER	BORING NUMBER	
P19436.A2	MW-[illegible]	SHEET 1 OF 2

SOIL BORING RECORD DRAWING

PROJECT WACKER SILTRONIC CORPORATION LOCATION PORTLAND, OREGON

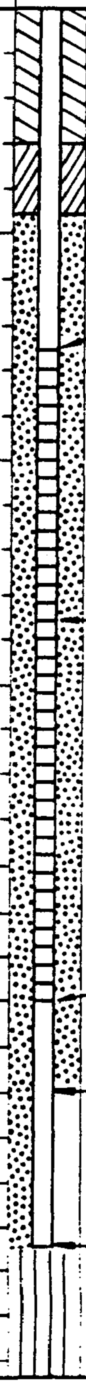
ELEVATION DRILLING CONTRACTOR GEOTECH EXPLORATIONS, BEAVERTON, OREGON

DRILLING METHOD AND EQUIPMENT CME-55, 6" HS AUGERS

WATER LEVEL AND DATE START FINISH LOGGER

ELEVATION	DEPTH BELOW SURFACE (FT.)	SAMPLE: INTERVAL	SAMPLE: TYPE AND NUMBER	SAMPLE: RECOVERY	STANDARD PENETRATION TEST RESULTS 6"-6"-6" (N)	SOIL DESCRIPTION: NAME, GRADATION OR PLASTICITY, PARTICLE SIZE DISTRIBUTION, COLOR, MOISTURE CONTENT, RELATIVE DENSITY OR CONSISTENCY, SOIL STRUCTURE, MINERALOGY, USCS GROUP SYMBOL	COMMENTS: DEPTH OF CASING, DRILLING RATE, DRILLING FLUID LOSS, TESTS AND INSTRUMENTATION
							Grout to surface
							Top of bentonite at 3'
							Top of gravel at 4 1/2'
	5	5.0 – 6.5	S-1	18	1-2-3 (5)	SAND, poorly graded, fine sand, brown, moist, loose (SP), fill.	
							Screen top at 7 1/2'
							Driller notes water at ±8'
	10	10.0 – 11.5	S-2	0	1-4-5	NO RECOVERY; sample tube came up oily, strong hydrocarbon odor, sandy material on outside of sampler.	
							15' screen 2" schedule 40 10 slot PVC
	15	15.0 – 16.5	S-3	18	1-1-2 (3)	SAND, poorly graded, fine sand, chalk gray, wet, loose (SP), some lenses of silt; strong hydrocarbon odor, oily material observed on sample fill.	
							Driller notes considerabe degree of oiliness to cutting from 15'-25', more than in MW-1
	20	20.0 – 21.5	S-4	18	5-6-6 (12)	SANDY SILT, non-plastic, ~30% fill sand, medium to dark gray, wet, firm, (ML), strong hydrocarbon odor, noticeable oil in sample fill?	
							Screen bottom at 22'
							5' sump
	25	25.0 – 26.5	S-5	18	3-5-5 (10)	Upper 14" - SAND, as in S-3, includes strong hydrocarbon odor and visible oil in sample, material may be slough from drilling and washing out heaved zone, may not be representative of 25'-26.5' interval. Lower 4" - SILT, low plasticity, medium grayish brown, firm, moist (ML), no apparent hydrocarbon, native.	Driller notes 2' heave at 25', had to wash out hole
							Sump bottom at 27' 4"

SYMBOLIC LOG



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CH2M HILL

PROJECT NUMBER	BORING NUMBER	
P19436.A2	MW-_	SHEET 2 OF 2

SOIL BORING RECORD DRAWING

PROJECT WACKER SILTRONIC CORPORATION LOCATION PORTLAND, OREGON

ELEVATION ______ DRILLING CONTRACTOR GEOTECH EXPLORATIONS, BEAVERTON, OREGON

DRILLING METHOD AND EQUIPMENT CME-55, 6" HS AUGERS

WATER LEVEL AND DATE ______ START ______ FINISH ______ LOGGER ______

ELEVATION	DEPTH BELOW SURFACE (FT.)	SAMPLE INTERVAL	SAMPLE TYPE AND NUMBER	SAMPLE RECOVERY	STANDARD PENETRATION TEST RESULTS 6"-6"-6" (N)	SOIL DESCRIPTION: NAME, GRADATION OR PLASTICITY, PARTICLE SIZE DISTRIBUTION, COLOR, MOISTURE CONTENT, RELATIVE DENSITY OR CONSISTENCY, SOIL STRUCTURE, MINERALOGY, USCS GROUP SYMBOL	SYMBOLIC LOG	COMMENTS: DEPTH OF CASING, DRILLING RATE, DRILLING FLUID LOSS, TESTS AND INSTRUMENTATION
	30	31.5	S-6	18	3-3-4 (7)	SILT, low plasticity, grayish brown, moist, firm (ML), no noticeable hydrocarbon odor, native soil.		
						END MW at 31.5 feet		
								Worst sample S-3, S-4 - about the same

REV. 11-82 FORM D1586

CH2M HILL

PROJECT NUMBER	BORING NUMBER	
P19436.A2	MW	SHEET 1 OF 2

SOIL BORING RECORD DRAWING

PROJECT WACKER SILTRONIC CORPORATION LOCATION PORTLAND, OREGON

ELEVATION ______ DRILLING CONTRACTOR GEOTECH EXPLORATIONS, BEAVERTON, OREGON

DRILLING METHOD AND EQUIPMENT CME-55, 6" HS AUGERS

WATER LEVEL AND DATE ______ START ______ FINISH ______ LOGGER ______

ELEVATION	DEPTH BELOW SURFACE (FT.)	SAMPLE: INTERVAL	SAMPLE: TYPE AND NUMBER	SAMPLE: RECOVERY	STANDARD PENETRATION TEST RESULTS 6"-6"-6" (N)	SOIL DESCRIPTION: NAME, GRADATION OR PLASTICITY, PARTICLE SIZE DISTRIBUTION, COLOR, MOISTURE CONTENT, RELATIVE DENSITY OR CONSISTENCY, SOIL STRUCTURE, MINERALOGY, USCS GROUP SYMBOL	SYMBOLIC LOG	COMMENTS: DEPTH OF CASING, DRILLING RATE, DRILLING FLUID LOSS, TESTS AND INSTRUMENTATION
								Silty topsoil, then sandy cuttings to 5' Grout to surface
	5	5.0 6.5	S-1	18	7-6-2 (8)	SAND, poorly graded, fine sand, ~15% fine, but some interlayers of silt, medium dense, dry, light brown, (SP), fill.		Cuttine change to dark gray silt at ±7' 7' top of bentonite soil Top of sand pace 8 1/2'
	10	10.0 11.5	S-2	18	2-2-7 (9)	Interbedded silt and sand, sand same as above (SP), except gray, SILT, low plasticity, 10-15% sand, odor, light gray, moist, firm (ML), fill.		Screen top 12'
	15	15.0 16.5	S-3	18	1-4-10 (14)	SAND, poorly graded, same as S-1, except strong hydrocarbon odor (SP), fill.		Driller notes H_2O at ±15' First notice hydrocarbon odor in cutting at 15'
	20	20.0 21.5	S-4	18	4-4-7 (11)	Interbedded silt and sand, same as S-2, except includes partially decomposed wood fragments and mild to strong hydrocarbon odor, wet, gray, fill.		15' schedule 40 2" 10 slot PVC screen
	25	25.0 26.5	S.5	18	5-6-6 (12)	SAND, poorly graded, fine sand, less than 10% fine, wet, medium to dark gray, compact (SP), strong hydrocarbon odor, fill.		Screen bottom 27' 5'- 4" Sump
	30	30.0						

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CH2M HILL

PROJECT NUMBER	BORING NUMBER	
P19436.A2	MW-3	SHEET 2 OF 2

SOIL BORING RECORD DRAWING

PROJECT WACKER SILTRONIC CORPORATION LOCATION PORTLAND, OREGON

ELEVATION ________ DRILLING CONTRACTOR GEOTECH EXPLORATIONS, BEAVERTON, OREGON

DRILLING METHOD AND EQUIPMENT CME-55, 6" HS AUGERS

WATER LEVEL AND DATE ________ START ________ FINISH ________ LOGGER ________

ELEVATION	DEPTH BELOW SURFACE (FT.)	SAMPLE INTERVAL	SAMPLE TYPE AND NUMBER	SAMPLE RECOVERY	STANDARD PENETRATION TEST RESULTS 6"-6"-6" (N)	SOIL DESCRIPTION NAME, GRADATION OR PLASTICITY PARTICLE SIZE DISTRIBUTION, COLOR MOISTURE CONTENT, RELATIVE DENSITY OR CONSISTENCY, SOIL STRUCTURE, MINERALOGY, USCS GROUP SYMBOL	SYMBOLIC LOG	COMMENTS DEPTH OF CASING DRILLING RATE DRILLING FLUID LOSS TESTS AND INSTRUMENTATION
		31.5	S-6	18	4-5-5 (10)	SAND, poorly graded, fine sand, some interbedded silt in lower 2-4", medium gray, wet, medium dense, strong hydrocarbon odor, fill.		Sump bottom at 32'- 4"
								Bottom of fill at ±34 1/2'
	35	35.0						
		36.5	S-7	18	8-6-6 (12)	Upper 14" - mixture of sand and silt, probably washed cavings. Lower 4" - SILT, low plasticity, medium to dark gray, moist, firm (ML), slight hydrocarbon odor in upper 12", not noticeable in lower 6", sand and silt were mixed together in jar, silt is probably native soil.		Augered to 35' and driller notes 3' of heave; opted to remove check ball from sampler and jet it to sample position in hopes of getting recovery; sample may be disturbed; pumped fresh water into hole (sample of water taken).
	40	40.0						
		41.5	S-8	6"	3-3-3 (9)	Upper 12" - sand as in S-6, but is washed, probably is heaved material, discarded. Lower 6" - SILT, low plasticity, medium to dark gray, moist, firm (ML), probably native soil, no noticeable hydrocarbon odor.		
								Worst samples Sample choices, any of S-3, S-4, S-5, S-6.

CH2M HILL

PROJECT NUMBER	BORING NUMBER	
P19436.A2	MW-	SHEET 1 OF 2

SOIL BORING RECORD DRAWING

PROJECT WACKER SILTRONIC CORPORATION LOCATION PORTLAND, OREGON

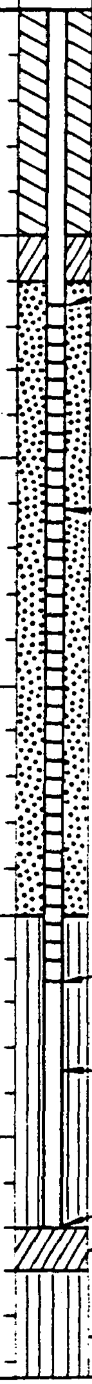
ELEVATION ______ DRILLING CONTRACTOR GEOTECH EXPLORATIONS, BEAVERTON, OREGON

DRILLING METHOD AND EQUIPMENT CME-55, 6" HS AUGERS

WATER LEVEL AND DATE ______ START ______ FINISH ______ LOGGER ______

ELEVATION	DEPTH BELOW SURFACE (FT.)	SAMPLE: INTERVAL	SAMPLE: TYPE AND NUMBER	SAMPLE: RECOVERY	STANDARD PENETRATION TEST RESULTS 6"-6"-6" (N)	SOIL DESCRIPTION: NAME, GRADATION OR PLASTICITY, PARTICLE SIZE DISTRIBUTION, COLOR, MOISTURE CONTENT, RELATIVE DENSITY OR CONSISTENCY, SOIL STRUCTURE, MINERALOGY, USCS GROUP SYMBOL	COMMENTS: DEPTH OF CASING, DRILLING RATE, DRILLING FLUID LOSS, TESTS AND INSTRUMENTATION
							Hole is within 20' of abandoned natural gas line
							Grout 5' to surface
	5	5.0					Bentonite from 5-6'
		6.5	S-1	18	5-1-2 (3)	Upper 9" - SAND, poorly graded, fine sand, brown, moist to wet, loose (SP). Lower 9" - SILT, non-plastic, 10-20% fine sand, dark gray, moist, soft (ML), fill.	Screen top at 6 1/2'
							Some gravel - like material at 8' Driller notes water at ±8';
	10	10.0					
		11.5	S-2	18	11-13-11 (24)	Upper 6" - SAND, same as S-1, maybe slough. Lower 12" - SILT, same as above.	15' screen 10 slot 2" schedule 40 PVC
	15	15.0					
		16.5	S-3	6"	3-3-4 (7)	SAND, poorly graded, fine sand, saturated, loose, (SP), maybe slough, possible mild odor of hydrocarbon.	Piece wood jammed into end of shoe
	20	20.0					Fill / Native ±20'
		21.5	S-4	18	1-4-4 (8)	SILT, low plasticity, brownish gray, moist, firm, (ML), native soil; included pieces of wire, probably dragged into sample.	Screen bottom at 21 1/2'
							5'- 4" Sump
	25	25.0					
		26.5	S-5	12	4-4-4 (8)	SILT, same as above.	Tailpiece bottom at 27'
							Bentonite from 27-28'
							Gravel to 41 1/2'
	30	30.0					

SYMBOLIC LOG



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CH2M HILL

PROJECT NUMBER	BORING NUMBER	
P19436.A2	MW-4	SHEET 2 OF 2

SOIL BORING RECORD DRAWING

PROJECT WACKER SILTRONIC CORPORATION LOCATION PORTLAND, OREGON

ELEVATION ______ DRILLING CONTRACTOR GEOTECH EXPLORATIONS, BEAVERTON, OREGON

DRILLING METHOD AND EQUIPMENT CME-55, 6" HS AUGERS

WATER LEVEL AND DATE ______ START ______ FINISH ______ LOGGER ______

ELEVATION	DEPTH BELOW SURFACE (FT.)	SAMPLE INTERVAL	SAMPLE TYPE AND NUMBER	SAMPLE RECOVERY	STANDARD PENETRATION TEST RESULTS 6"-6"-6" (N)	SOIL DESCRIPTION NAME, GRADATION OR PLASTICITY PARTICLE SIZE DISTRIBUTION, COLOR MOISTURE CONTENT, RELATIVE DENSITY OR CONSISTENCY, SOIL STRUCTURE, MINERALOGY, USCS GROUP SYMBOL	SYMBOLIC LOG	COMMENTS DEPTH OF CASING DRILLING RATE DRILLING FLUID LOSS TESTS AND INSTRUMENTATION
		31.5	S-6	18	4-5-4 (9)	SILT, low plasticity, gray with brown mottling, moist, firm (ML), includes some decomposed plant fragments.		
	35	35.0						
		36.5	S-7	8	2-3-8 (11)	SANDY SILT, non-plastic, 30-50% fine sand, brown, moist, firm (ML).		Gravel to 41 1/2'
	40	40.0						
		41.5	S-8	8		END MW at 41.5'		
								Worst samples None - all have clean appearance

REV. 11-82 FORM D1586

Koppers021747

CH2M HILL

PROJECT NUMBER	BORING NUMBER	
P19436.A2	MW-	SHEET 1 OF 2

SOIL BORING RECORD DRAWING

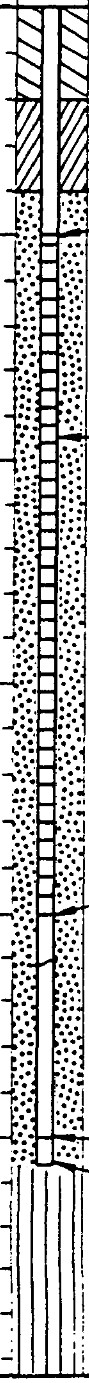
PROJECT **WACKER SILTRONIC CORPORATION** LOCATION PORTLAND, OREGON

ELEVATION ______ DRILLING CONTRACTOR GEOTECH EXPLORATIONS, BEAVERTON, OREGON

DRILLING METHOD AND EQUIPMENT CME-55, 6" HS AUGERS

WATER LEVEL AND DATE ______ START ______ FINISH ______ LOGGER ______

ELEVATION	DEPTH BELOW SURFACE (FT.)	SAMPLE INTERVAL	SAMPLE TYPE AND NUMBER	SAMPLE RECOVERY	STANDARD PENETRATION TEST RESULTS 6"-6"-6" (N)	SOIL DESCRIPTION: NAME, GRADATION OR PLASTICITY, PARTICLE SIZE DISTRIBUTION, COLOR, MOISTURE CONTENT, RELATIVE DENSITY OR CONSISTENCY, SOIL STRUCTURE, MINERALOGY, USCS GROUP SYMBOL	SYMBOLIC LOG	COMMENTS: DEPTH OF CASING, DRILLING RATE, DRILLING FLUID LOSS, TESTS AND INSTRUMENTATION
								Grout to surface
								Top of bentonite scale = 2'
								Top of sand at 4'
	5	5.0						Screen top at 5'
		6.5	S-1	18	4-4-8 (12)	SAND, poorly graded, fine sands, brown and gray, some 1/2" silt lenses, moist, loose; includes some oil sheen and odor.		Dark gray sandy material in cuttings from 5'-10', noticeable oily smell and sheen
	10	10.0						Driller notes water 5'-10'
		11.5	S-2	18	6-6-8 (14)	SAND, poorly graded, fine sand, dark gray, wet, loose to compact, (SP), fill, saturated with oil (split samples taken, Jar 1 and Jar 2).		
	15	15.0						
		16.5	S-3	18		SAND, same as S-2, except only has oily odor and occassional sheen in soil.		
	20	20.0						Screen bottom at 20'
		21.5	S-4	18	3-4-5 (9)	SAND, same as S-2, excet has mild odor of oil; silt in top.		Silt in tip of sampler, for S-4 fill ±21 Native
	25	25.0						Sump bottom at 25'
		26.5	S-5	9	3-5-10 (15)	SILT, low plasticity, 10-15% fine sand, medium gray with brown, yellow and reddish mottling, slightly moist, very stiff (ML), no noticeable hydrocarbon odor.		Tailpiece bottom at 25' - 4"
	30	30.0						NOTE: Driller lost steel weight for tape in hole at 30 feet, not recovered.



REV 11-82 FORM D1586

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CH2M HILL

PROJECT NUMBER	BORING NUMBER	
P19436.A2	MW-	SHEET 2 OF 2

SOIL BORING RECORD DRAWING

PROJECT WACKER SILTRONIC CORPORATION LOCATION PORTLAND, OREGON

ELEVATION ______ DRILLING CONTRACTOR GEOTECH EXPLORATIONS, BEAVERTON, OREGON

DRILLING METHOD AND EQUIPMENT CME-55, 6" HS AUGERS

WATER LEVEL AND DATE ______ START ______ FINISH ______ LOGGER ______

ELEVATION	DEPTH BELOW SURFACE (FT.)	SAMPLE INTERVAL	SAMPLE TYPE AND NUMBER	SAMPLE RECOVERY	STANDARD PENETRATION TEST RESULTS 6"-6"-6" (N)	SOIL DESCRIPTION NAME, GRADATION OR PLASTICITY PARTICLE SIZE DISTRIBUTION, COLOR, MOISTURE CONTENT RELATIVE DENSITY OR CONSISTENCY, SOIL STRUCTURE, MINERALOGY, USCS GROUP SYMBOL	SYMBOLIC LOG	COMMENTS DEPTH OF CASING DRILLING RATE DRILLING FLUID LOSS TESTS AND INSTRUMENTATION
		31.5	S-6	18	4-5-5 (10)	SILT, low plasticity, about 10% fine sand, gray with brown mottling, moist, stiff (ML), no noticeable hydrocarbon odor.		
						END MW at 31.5 feet.		
								Worst samples S-2 = worst S-3

REV. 11-82 FORM D1586

Koppers021749

CH2M HILL

PROJECT NUMBER	BORING NUMBER	SHEET
P19436.A2	MW-	1 OF 2

SOIL BORING RECORD DRAWING

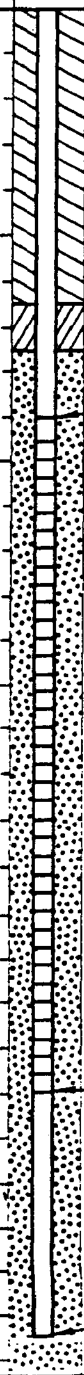
PROJECT WACKER SILTRONIC CORPORATION LOCATION PORTLAND, OREGON

ELEVATION ______ DRILLING CONTRACTOR GEOTECH EXPLORATIONS, BEAVERTON, OREGON

DRILLING METHOD AND EQUIPMENT CME-55, 6" HS AUGERS

WATER LEVEL AND DATE ______ START ______ FINISH ______ LOGGER ______

ELEVATION	DEPTH BELOW SURFACE (FT.)	SAMPLE INTERVAL	SAMPLE TYPE AND NUMBER	SAMPLE RECOVERY	STANDARD PENETRATION TEST RESULTS 6"-6"-6" (N)	SOIL DESCRIPTION NAME, GRADATION OR PLASTICITY PARTICLE SIZE DISTRIBUTION, COLOR, MOISTURE CONTENT, RELATIVE DENSITY OR CONSISTENCY, SOIL STRUCTURE, MINERALOGY, USCS GROUP SYMBOL	SYMBOLIC LOG	COMMENTS DEPTH OF CASING, DRILLING RATE, DRILLING FLUID LOSS, TESTS AND INSTRUMENTATION
	5	5.0–6.5	S-1	18	3-8-11 (19)	SAND, poorly graded, fine sand, less than 10% fine, brown, moist, compact (SP), fill.		Grout to surface; Bentonite to 6 1/2'; Sand to 7 1/2'; Top of screen at 9'
	10	10.0–11.5	S-2	18	10-10-11 (21)	Primarily sand, as in S-1, but with several 1-inch silt layers; lower 6" of sample has strong hydrocarbon odor to it.		Driller notes water at ±12', coincident with appearance of "oily" odor from cuttings while drilling from 10-15'
	15	15.0–16.5	S-3	18	1-1-2 (3)	SAND, as in S-1, except lower 6" have blackish discoloration and strong hydrocarbon odor; small oily splotches noticeable in soil.		
	20	20.0–21.5	S-4	18	3-3-5 (8)	Upper 6" - SAND as in S-1, have blackish discoloration and hydrocarbon odor, fill. Lower 12" - SILT, low plasticity, gray with brown mottling, firm (ML), hydrocarbon odor not noticeable.		A-rods came out of hold with unusual yellow discoloration from water at 20-25'; Bottom of screen at 24'
	25	25.0–26.5	S-5	18	9-26-26 (52)	SAND, as in S-1, but dark gray with mild hydrocarbon odor, material might be heaved sands and not representative of in-situ soil at 25'.		Driller notes 4' of heave after drilling to 25'; also, chain fell in hole, but was able to recover by retracting augers from hole; Augers moved during SPT from S-5, driller says no contact with sampler; why so high of an N value?
	30	30.0						Sump to 29 1/2'



REV. 11-82 FORM D1586

Koppers021750

CH2M HILL

PROJECT NUMBER	BORING NUMBER	
P19436.A2	MW	SHEET 1 OF 2

SOIL BORING RECORD DRAWING

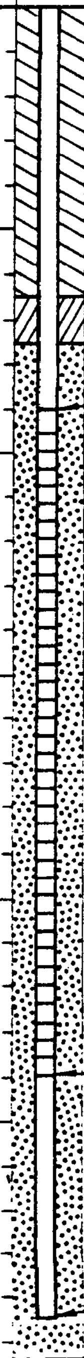
PROJECT WACKER SILTRONIC CORPORATION LOCATION PORTLAND, OREGON

ELEVATION ______ DRILLING CONTRACTOR GEOTECH EXPLORATIONS, BEAVERTON, OREGON

DRILLING METHOD AND EQUIPMENT CME-55, 6" HS AUGERS

WATER LEVEL AND DATE ______ START ______ FINISH ______ LOGGER ______

ELEVATION	DEPTH BELOW SURFACE (FT.)	SAMPLE: INTERVAL	SAMPLE: TYPE AND NUMBER	SAMPLE: RECOVERY	STANDARD PENETRATION TEST RESULTS 6"-6"-6" (N)	SOIL DESCRIPTION: NAME, GRADATION OR PLASTICITY, PARTICLE SIZE DISTRIBUTION, COLOR, MOISTURE CONTENT, RELATIVE DENSITY OR CONSISTENCY, SOIL STRUCTURE, MINERALOGY, USCS GROUP SYMBOL	SYMBOLIC LOG	COMMENTS: DEPTH OF CASING, DRILLING RATE, DRILLING FLUID LOSS, TESTS AND INSTRUMENTATION
								Grout to surface
	5	5.0 6.5	S-1	18	3-8-11 (19)	SAND, poorly graded, fine sand, less than 10% fine, brown, moist, compact (SP), fill.		Bentonite to 6 1/2' Sand to 7 1/2' Top of screen at 9'
	10	10.0 11.5	S-2	18	10-10-11 (21)	Primarily sand, as in S-1, but with several 1-inch silt layers; lower 6" of sample has strong hydrocarbon odor to it.		Driller notes water at ±12', coincident with appearance of "oily" odor from cuttings while drilling from 10-15'
	15	15.0 16.5	S-3	18	1-1-2 (3)	SAND, as in S-1, except lower 6" have blackish discoloration and strong hydrocarbon odor; small oily splotches noticeable in soil.		
	20	20.0 21.5	S-4	18	3-3-5 (8)	Upper 6" - SAND as in S-1, have blackish discoloration and hydrocarbon odor, fill. Lower 12" - SILT, low plasticity, gray with brown mottling, firm (ML), hydrocarbon odor not noticeable.		A-rods came out of hold with unusual yellow discoloration from water at 20-25' Bottom of screen at 24'
	25	25.0 26.5	S-5	18	9-26-26 (52)	SAND, as in S-1, but dark gray with mild hydrocarbon odor, material might be heaved sands and not representative of in-situ soil at 25'.		Driller notes 4' of heave after drilling to 25'; also, chain fell in hole, but was able to recover by retracting augers from hole; Augers moved during SPT from S-5, driller says no contact with sampler; why so high of an N value? Sump to 29 1/2'
	30	30.0						



REV. 11-82 FORM D1586

Koppers021751

CH2M HILL

PROJECT NUMBER	BORING NUMBER	
P19436.A2	MW-	SHEET 2 OF 2

SOIL BORING RECORD DRAWING

PROJECT WACKER SILTRONIC CORPORATION LOCATION PORTLAND, OREGON

ELEVATION ______ DRILLING CONTRACTOR GEOTECH EXPLORATIONS, BEAVERTON, OREGON

DRILLING METHOD AND EQUIPMENT CME-55, 6" HS AUGERS

WATER LEVEL AND DATE ______ START ______ FINISH ______ LOGGER ______

ELEVATION	DEPTH BELOW SURFACE (FT.)	SAMPLE INTERVAL	SAMPLE TYPE AND NUMBER	SAMPLE RECOVERY	STANDARD PENETRATION TEST RESULTS 6"-6"-6" (N)	SOIL DESCRIPTION: NAME, GRADATION OR PLASTICITY, PARTICLE SIZE DISTRIBUTION, COLOR, MOISTURE CONTENT, RELATIVE DENSITY OR CONSISTENCY, SOIL STRUCTURE, MINERALOGY, USCS GROUP SYMBOL	SYMBOLIC LOG	COMMENTS: DEPTH OF CASING, DRILLING RATE, DRILLING FLUID LOSS, TESTS AND INSTRUMENTATION
		31.5	S-6	18	5-7-12 (19)	All 18" of soil in barrel is SAND, poorly graded, fine sand, less than 10% fine, medium to dark gray, wet, compact, (SP), probably heave or disturbed soil, not representative of 30' depth; mild hydrocarbon odor. 2" of soil in shoe of sampler is SANDY SILT, non-plastic, 30-50% fine sand, medium gray, wet, firm, (ML); no noticeable hydrocarbon odor, sandy silt is probably representative of in-situ soil.		Driller notes 3' of heave from 30-29' prior to sampling S-6; had to drill/wash out heave Sample choices S-3

REV. 11/82 FORM D1586

Koppers021752

CH2M HILL

PROJECT NUMBER	BORING NUMBER	
P19436.A2	MY	SHEET 1 OF 2

SOIL BORING RECORD DRAWING

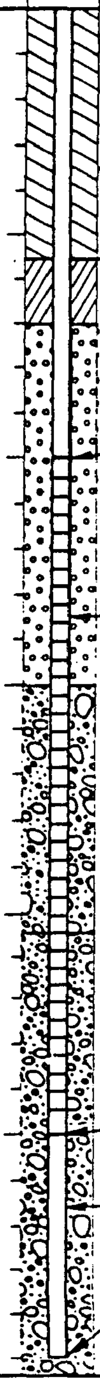
PROJECT **WACKER SILTRONIC CORPORATION** LOCATION PORTLAND, OREGON

ELEVATION ______ DRILLING CONTRACTOR GEOTECH EXPLORATIONS, BEAVERTON, OREGON

DRILLING METHOD AND EQUIPMENT CME-55, 6" HS AUGERS

WATER LEVEL AND DATE ______ START ______ FINISH ______ LOGGER ______

ELEVATION	DEPTH BELOW SURFACE (FT.)	SAMPLE: INTERVAL	SAMPLE: TYPE AND NUMBER	SAMPLE: RECOVERY	STANDARD PENETRATION TEST RESULTS 6"-6"-6" (N)	SOIL DESCRIPTION: NAME, GRADATION OR PLASTICITY, PARTICLE SIZE DISTRIBUTION, COLOR, MOISTURE CONTENT, RELATIVE DENSITY OR CONSISTENCY, SOIL STRUCTURE, MINERALOGY, USCS GROUP SYMBOL	SYMBOLIC LOG	COMMENTS: DEPTH OF CASING, DRILLING RATE, DRILLING FLUID LOSS, TESTS AND INSTRUMENTATION
								Grout to surface
	5	5.0 – 6.5	S-1	12"	1-3-1 (4)	Lower 6" - SILT, low plasticity, moist, gray, soft (ML). Upper 6" - SAND, poorly graded, fine sand, brown, wet, loose, (SP), fill.		5 1/2' top of bentonite Cavings around PVC 7-15'
	10	10.0 – 11.5	S-2	14	5-8-11 (18)	SAND as in upper 6" of S-1, (SP), fill.		10' of top of screen Driller notes water at ±12' 15' section 10 slot PVC wells
	15	15.0 – 16.5	S-3	18	2-1-5	SAND, same as upper 6" of S-1 (SP), fill.		During well construction, drill hole walls began squeezing in at 5' up to 7', sand was packed in auger and walls apparently squeezed in faster than sand could drop out; tried twice unsuccessfully to jet-out sand.
	20	20.0 – 21.5	S-4	18	5-5-6 (11)	Upper 6" - sand as in upper 6" of S-1, (SP), fill; mild hydrocarbon odor. Lower 12" - SILT, low plasticity, medium brown with gray mottling, moist, firm, (ML); native soil.		Fill Native ±
	25	25.0 – 26.5	S-5	18	4-3-4 (7)	Upper 9" - SILT, low plasticity, medium brown with gray mottling, moist, firm, (ML). Lower 9" - SAND, poorly graded, fine sand, medium gray, wet, loose, (SP), strong hydrocarbon odor, visible blotches of oil (?) in both silt and sand.		25' bottom screen 5'- 4" Sump Bottom of Sump = 30' Driller notes heave at 30' ±4' of heave
	30	30.0						



REV 11-82 FORM D1586

Koppers021753

CH2M HILL

PROJECT NUMBER	BORING NUMBER	
P19436.A2	MW	SHEET 2 OF 2

SOIL BORING RECORD DRAWING

PROJECT **WACKER SILTRONIC CORPORATION** LOCATION PORTLAND, OREGON

ELEVATION ________ DRILLING CONTRACTOR GEOTECH EXPLORATIONS, BEAVERTON, OREGON

DRILLING METHOD AND EQUIPMENT CME-55, 6" HS AUGERS

WATER LEVEL AND DATE ________ START ________ FINISH ________ LOGGER ________

ELEVATION	DEPTH BELOW SURFACE (FT.)	SAMPLE			STANDARD PENETRATION TEST RESULTS	SOIL DESCRIPTION	SYMBOLIC LOG	COMMENTS
		INTERVAL	TYPE AND NUMBER	RECOVERY	6"-6"-6" (N)	NAME, GRADATION OR PLASTICITY, PARTICLE SIZE DISTRIBUTION, COLOR, MOISTURE CONTENT, RELATIVE DENSITY OR CONSISTENCY, SOIL STRUCTURE, MINERALOGY, USCS GROUP SYMBOL		DEPTH OF CASING, DRILLING RATE, DRILLING FLUID LOSS, TESTS AND INSTRUMENTATION
		31.5	S-6	18	2-1-2 (3)	Lower 9" - SAND, poorly graded, fine, brown, wet, soft, (SP),. Upper 9" - SAND, very fine, brown, wet, loose, (SM); All has definite hydrocarbon (?) odor, not visible in soil, however. Sample may be distrubed, heave material.		Reamed out heaved area from 26 to 30' with wash water and tricone bit to clear auger. Backfill to 32'-4"
	35	35.0						
		36.5	S-7	18	3-5-5 (10)	SANDY SILT, low plasticity, 20-30% fine sand, medium brown, moist, soft, (ML); noticeable hydrocarbon (?) odor.		
	40	40.0						
		41.5	S-8	14"	8-11-17 (28)	Upper 7" - SILT, low plasticity, brown, wet, firm, (ML). Lower 7" - SILTY SAND, fine sand, about 30% fine, brown, wet, compact, (SM); both silt and sand have noticeable hydrocarbon (?) odor, no visible traces. END MW at 41.5 feet		
								Sample choices (Ranked from worst) *S-5 S-6 S-7 - S-8 (about the same) *amount of odor

REV. 11-82 FORM D1586

CH2M HILL CHAIN OF CUSTODY RECORD

PROJECT NUMBER	PROJECT NAME

LABORATORY

STA. NO.	DATE	TIME	COMP	GRAB	SAMPLE IDENTIFICATION	NUMBER OF CONTAINERS											REMARKS

SAMPLED BY AND TITLE *(SIGNATURE)*	DATE/TIME	RELINQUISHED BY: *(SIGNATURE)*	DATE/TIME	RECEIVED BY: *(SIGNATURE)*

RELINQUISHED BY: *(SIGNATURE)*	DATE/TIME	RECEIVED BY: *(SIGNATURE)*	RELINQUISHED BY: *(SIGNATURE)*	DATE/TIME	RECEIVED BY LAB: *(SIGNATURE)*

REMARKS

SAMPLE SHIPPED VIA
☐ UPS ☐ BUS
☐ FEDERAL EXPRESS

AIR BUS BILL NUMBER

DISTRIBUTION: WHITE — ORIGINAL ACCOMPANIES SHIPMENT, PINK — COPY TO COORDINATOR FIELD FILES, YELLOW — CLIENT

FORM 340

Koppers021755

COFFEY LABORATORIES, INC.
4914 N.E. 122nd Ave.
Portland, OR 97230
Phone: (503) 254-1794

April 30, 1985
Log #A850410-[illegible]

Wacker Siltronics
P.O. Box 03180
Portland, Oregon 97203

Analyses Requested: Oil and Grease, Phenols, Volatiles, and Polynuclear Aromatic Hydrocarbons

Sample Identifications:
#1 - MW1, S-3 (15.0' - 16.5')
#2 - MW2, S-4 (20.0' - 21.5')
#3 - MW3, S-5 (25.0' - 26.5')
#4 - MW4, S-1 (5.0' - 6.5')
#5 - MW4, S-7 (35.0' - 36.5')
#6 - MW5, S-2 (10.0' - 11.5')
#7 - MW6, S-3 (15.0' - 16.5')
#8 - MW7, S-5 (25.0' - 26.5')
#9 - MW7, S-8 (40.0' - 41.5')

SAMPLE #	OIL AND GREASE
#1	0.340 %
#2	0.1498 %
#3	0.0587 %
#4	0.0914 %
#5	0.0304 %
#6	0.190 %
#7	0.0539 %
#8	0.0650 %
#9	0.0586 %

THIS REPORT CONTINUES

COFFEY LABORATORIES, INC.
4914 N.E. 122nd Ave.
Portland, OR 97230
Phone: (503) 254-1794

Wacker Siltro[illegible]
Log #A850410-I

April 30, 1995

PHENOL RESULTS

ANALYSIS	SAMPLE #1 RESULTS
Phenol	0.35
O-Cresol	0.04
3 & 4 Chlorophenol	0.44
2,3,4,5 Tetrachlorophenol	0.24
2,3,4,5 Tetrachlorophenol	4.9
M & P Cresol	0.006

ANALYSIS	SAMPLE #2 RESULTS
Phenol	3.1
O-Cresol	3.4
3 & 4 Chlorophenol	17.5
2-Chlorophenol	7.8
2-Nitrophenol	0.20
2,4 Dimethylphenol	3.1
2,4 Dichlorophenol	3.7
2,4,5 Trichlorophenol	1.9
2,3,5,6 Tetrachlorophenol	4.0
2,3,4,5 Tetrachlorophenol	258

ANALYSIS	SAMPLE #3 RESULTS
Phenol	0.20
3 & 4 Chlorophenol	0.06
2-Chlorophenol	0.09

ANALYSIS	SAMPLE #4 RESULTS
Phenol	0.30
2-Chlorophenol	0.26
O-Cresol	0.02
M & P Cresol	0.08
2,3,5,6 Tetrachlorophenol	0.59
2,3,4,5 Tetrachlorophenol	0.40

ANALYSIS	SAMPLE #5 RESULTS
Phenol	0.17
2,3,5,6 Tetrachlorophenol	0.11
Pentachlorophenol	0.31

Results reported in mg/kg

THIS REPORT CONTINUED

COFFEY LABORATORIES, INC.
4914 N.E. 122nd Ave.
Portland, OR 97230
Phone: (503) 254-1794

Wacker Siltronics
Log #A850410-I

PHENOL RESULTS

ANALYSIS	SAMPLE #6 RESULTS
Phenol	0.07
O-Cresol	0.19
2,4 Dimethylphenol	0.22
2,4 Dichlorophenol	0.24
3 & 4 Chlorophenol	1.7
2,4,6 Trichlorophenol	0.22
2,3,5,6 Tetrachlorophenol	0.33
2,3,4,5 Tetrachlorophenol	0.23
2,4 Dinitrophenol	0.81
Pentachlorophenol	6.9

	SAMPLE #7 RESULTS
Phenol	0.05
O-Cresol	0.05
2-Chlorophenol	0.13
2,4 Dimethylphenol	0.17
3 & 4 Chlorophenol	0.32
2,3,5,6 Tetrachlorophenol	0.55
2,3,4,5 Tetrachlorophenol	4.7
Pentachlorophenol	5.1

	SAMPLE #8 RESULTS
Phenol	0.06
2,3,4,6 Tetrachlorophenol	1.0
2,3,4,5 Tetrachlorophenol	0.06

	SAMPLE #9 RESULTS
Phenol	0.08
2-Chlorophenol	0.14
2,3,5,6 Tetrachlorophenol	0.45
2,3,4,5 Tetrachlorophenol	0.25

Results reported in mg/Kg

THIS REPORT CONTINUED

Koppers021758

COFFEY LABORATORIES, INC.
4914 N.E. 122nd Ave.
Portland, OR 97230
Phone: (503) 254-1794

Wacker Siltronics
Log #A850410-I

April 30, 1985
Page Four

EP TOXICITY PESTICIDES

Results below apply to the water extract of soil samples. Water extracts performed as per EPA Specification of EP-Toxicity Method.

SAMPLE #	ENDRIN	LINDANE	METHOXYCHLOR	TOXAPHENE
#1	<0.002	<0.04	<0.1	<0.05
#2	<0.002	<0.04	<0.1	<0.05
#3	<0.002	<0.04	<0.1	<0.05
#4	<0.002	<0.04	<0.1	<0.05
#5	<0.002	<0.04	<0.1	<0.05
#6	<0.002	<0.04	<0.1	<0.05
#7	<0.002	<0.04	<0.1	<0.05
#8	<0.002	<0.04	<0.1	<0.05
#9	<0.002	<0.04	<0.1	<0.05
Allowed Limits	0.02	0.4	10	0.5

< denotes "less than"

Results expressed in mg/liter

EP TOXICITY HERBICIDES

SAMPLE #	2,4-D	2,4,5 TP (SILVEX)
#1	<10 (mg/liter)	<1 (mg/liter)
#2	<10	<1
#3	<10	<1
#4	<10	<1
#5	<10	<1
#6	10.0	<1
#7	150.0	<1
#8	<10	<1
#9	<10	<1

THIS REPORT CONTINUED

COFFEY LABORATORIES, INC.
4914 N.E. 122nd Ave.
Portland, OR 97230
Phone: (503) 254-1794

Wacker Siltronics
Log #A850410-I

April 30, 1985
Page Five

Subject: E P Toxicity Test.

Method of Analysis: Federal Register/Vol.45, No.98/Monday, May 19, 1980/ Rules and Regulations; Appendix II, Page 33127

Field Data: Samples were collected and delivered by the Client

ANALYSIS	#1	#2	#3	#4	#5
Arsenic	<0.05	<0.05	<0.05	<0.05	<0.05
Barium	0.05	0.11	0.05	0.09	<0.05
Cadmium	<0.05	<0.05	<0.05	<0.05	<0.05
Chromium	<0.05	<0.05	<0.05	<0.05	<0.05
Lead	<0.05	<0.05	<0.05	<0.05	<0.05
Mercury	<0.05	<0.05	<0.05	<0.05	<0.05
Selenium	<0.05	<0.05	<0.05	<0.05	<0.05
Silver	<0.05	<0.05	<0.05	<0.05	<0.05

ANALYSIS	#6	#7	#8	#9	Limit
Arsenic	<0.05	<0.05	<0.05	<0.05	5.0
Barium	0.05	0.11	0.09	0.15	100.0
Cadmium	<0.05	<0.05	<0.05	<0.05	1.0
Chromium	<0.05	<0.05	<0.05	<0.05	5.0
Lead	<0.05	<0.05	<0.05	<0.05	5.0
Mercury	<0.05	<0.05	<0.05	<0.05	0.2
Selenium	<0.05	<0.05	<0.05	<0.05	1.0
Silver	<0.05	<0.05	<0.05	<0.05	5.0

< denotes "less than"

Results expressed in mg/liter

THIS REPORT CONTINUED

COFFEY LABORATORIES, INC.
4914 N.E. 122nd Ave.
Portland, OR 97230
Phone: (503) 254-1794

Wacker Siltronic
Log #A850410-I

April 30, 1985
Page Six

VOLATILES (HEADSPACE ANALYSIS)

COMPOUND	#1	#2	#3	#4	#5
1,2-Dichloro-ethane	<0.01	<0.01	<0.01	<0.01	<0.01
1,1,1-Trichloro-ethane	0.01	<0.01	<0.01	<0.01	<0.01
Toluene	1.2	20	0.11	<0.1	<0.1
1,1,2,2 Tetra-chloroethylene	2.2	11	<0.05	<0.05	<0.05
Chlorobenzene	0.04	<0.04	<0.04	<0.04	<0.04
Ethyl Benzene	17.0	5.4	<0.04	<0.04	<0.04
Xylene	146	116	<1.0	<1.0	<1.0

COMPOUND	#6	#7	#8	#9
1,2-Dichloro-ethane	<0.01	<0.01	<0.01	<0.01
1,1,1-Trichloro-ethane	<0.01	<0.01	<0.01	<0.01
Toluene	0.20	<0.1	<0.1	<0.1
1,1,2,2 Tetra-chloroethylene	0.14	<0.05	<0.05	<0.05
Chlorobenzene	<0.04	<0.04	<0.04	<0.04
Ethyl Benzene	<0.04	<0.04	<0.04	0.05
Xylene	1.5	<1.0	2.8	1.2

< denotes "less than"

Results reported in mg/kg

Some interference was encountered due to naphthalene and some of the more volatile phenols and PNA's.

THIS REPORT CONTINUES

COFFEY LABORATORIES, INC.
4914 N.E. 122nd Ave.
Portland, OR 97230
Phone: (503) 254-1794

Wacker Siltronics
Log #A850410-I

April 30, 1985
Page Seven

POLYNUCLEAR AROMATIC HYDROCARBONS

COMPOUND	#1	#2	#3	#4	#5
Naphthalene	6.7	360	< 1	< 1	< 1
Acenaphthalene	5.6	230	< 1	< 1	< 1
Acenaphthene	9.0	560	< 1	< 1	< 1
Fluorene	5.0	290	< 1	< 1	< 1
Phenanthrine-Anthracene	32	1400	3	< 1	< 1
Fluoranthrene	16	530	< 1	< 1	< 1
Pyrene	19	550	< 1	< 1	< 1
Chrysene	12	92	< 1	< 1	< 1
Benzo(b) + Benzo(k) Fluoranthrene	8.0	120	< 1	< 1	< 1
Benzo(a)Pyrene	19	120	< 1	< 1	< 1
Indeno(1,2,3-CD) Pyrene+Dibenzo (a,b)Anthracene	< 1	270	< 1	< 1	< 1
Benzo(ghi)-Perylene	< 1	360	< 1	< 1	< 1

COMPOUND	#6	#7	#8	#9
Naphthalene	230	< 1	< 1	< 1
Acenaphthalene	24	< 1	< 1	< 1
Acenaphthene	29	< 1	< 1	< 1
Fluorene	20	< 1	< 1	< 1
Phenanthrine-Anthracene	150	< 1	1.6	< 1
Fluoranthrene	50	< 1	1.1	< 1
Pyrene	57	< 1	1.2	< 1
Chrysene	36	< 1	1.7	< 1
Benzo(b)+Benzo(k) Fluoranthrene	200	< 1	< 1	< 1
Benzo(a)Pyrene	100	< 1	< 1	< 1
Indeno(1,2,3-CD Pyrene+Dibenzo (a,b)Anthracene	7	< 1	< 1	< 1
Benzo(ghi)-Perylene	25	< 1	< 1	< 1

< denotes "less than"
Results reported in mg/Kg

Sincerely,

Susan M. Coffey

Susan M. Coffey
President

SMC/db

Koppers021762

Dept. of Environmental Quality
RECEIVED
APR 15 1985
NORTHWEST REGION

ADDENDA TO

TCE STRIPPER OPERATIONS, 1979 - 1985

- MODIFICATIONS
- SPILL INCIDENTS
- CLEAN-UP PROGRAMS

Prepared by: James R. Ellis
April 15, 1985

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N. Letter Dated 3-4-85 - James Ellis to Renato Dulay

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3-19-85	4:00 p.m.	John Pittman and Jim Ellis met with Janet Gillaspie and Renato Dulay at the DEQ offices to present the Siltronic proposal for the conclusion of the clean-up activities. This proposal included the chronological summary of the TCE stripper operations, as well as all documentation pertinent to the subject, (see Attachment S). Janet Gillaspie indicated that she would require approximately one week for review before a response to the proposal could be made.
3-23-85 through 3-3-85		Wacker Siltronic plant shutdown; office closed.
4-1-85	9:30 a.m.	Renato Dulay called Jim Ellis to indicate that the DEQ had reviewed the above mentioned proposal and had written a letter in response. Mr. Dulay reviewed the response over the telephone. In summary, Mr. Dulay indicated that the DEQ still considered the spill to be a listed waste and that the small amounts of TCE which were indicated in the last sampling program must be cleaned up to background levels, i.e., <1 ppm TCE. The only other alternative was to delist. Mr. Dulay went on to say that if clean-up was chosen as the course of action, he would recommend that 1 1/2 feet be removed from in front of the stripper (Area 1) and 6 inches be removed from around the area of Sample Number 5 in Area 2. One surface sample at the excavated depth was to be taken in each of these two areas to determine if the recommended depth reached background levels. Mr. Dulay indicated that a confirming letter would be sent later.

		Mr. Dulay said that he was considering a deadline of April 5 for resolution. Jim Ellis requested that the letter be held until a schedule could be established.
4-1-85	3:00 p.m.	Jim Ellis called Renato Dulay after contacting Emergency Environmental Services Company requesting that the deadline be extended to April 12. Mr. Dulay approved this extension.
4-2-85		Siltronic dug 2' x 2' sample holes in each area where an excavated surface sample was required. The hole in Area 1 was dug to an 18" depth and the hole in Area 2 was dug to a 6" depth, (see Attachment T).
4-3-85		CH2M-Hill specialists were called in to attain a soil sample at the 18" level in Area 1 and at the 6" level in Area 2. These two samples were taken to Coffey Labs immediately.
4-4-85		Results from the soil analyses were given to Jim Ellis by Coffey Labs on the telephone. Both samples indicated a 2.0 ppm TCE. Coffey Labs indicated that this test provides an accuracy in excess of ± 1 ppm so it was decided that the test should be repeated on a larger (50 gram) portion of the same sample and also that another sample should be taken from each sample hole at approximately the same depth so that an additional analyses could be run.
4-5-85	11:00 a.m.	Additional samples were taken by CH2M-Hill and immediately delivered to Coffey Labs.

4-5-85	5:00 p.m.	Coffey Labs called Jim Ellis to provide results of tests previously discussed on 4-4-85. The results were significantly less that 1 ppm indicating that background levels had been reached at a 18" depth in Area 1 and 6" depth in Area 2, (see Attachment U).
4-8-85	8:30 a.m.	Jim Ellis called Renato Dulay to discuss the results of the sampling/testing program and the procedures used. It was agreed that Mr. Dulay would visit the plant site at 10:00 a.m. to inspect the sample holes.
4-8-85	10:00 a.m.	Renato Dulay inspected the sample holes and again reviewed the results. He indicated that after the excavation was completed, Wacker could install the concrete dike, but a waiting period may be necessary to obtain a tax credit.
4-8-85	4:00 p.m.	Jim Ellis received letter from Janet Gillaspie which confirmed content of discussion with Renato Dulay on 4-1-85. Jim Ellis visited the DEQ offices at 4:30 p.m. to pick up speed letter and diagrams outlining excavation program which was recommended by DEQ in letter of April 5, (see Attachment V).
4-9-85		Jim Ellis contacted Emergency Environmental Services Company to confirm that excavation activities could commence as scheduled.
4-10-85	10:00 a.m.	Emergency Environmental Services Company moved into the plant to set up for excavation of Area 1. This excavation was completed by 4 p.m. Dirt from this area was piled in Area 2. Dirt could not be transported to Arlington Disposal Site until Friday, April 12, (see attachment W).

4-12-85	7:30 a.m	Emergency Environmental Services Company returned to the plant to load up the dirt from the excavation of Area 1 and also to excavate Area 2. By 10:00 a.m. all soil removal was completed, (see Attachment W). Additional excavation in Areas 1 and 2 amounted to approximately 15 cubic yards.
4-12-85	--	Jim Ellis wrote letter to Janet Gillaspie, indicating that clean-up program had been completed. It is estimated that the costs shown on Table 2, (Attachment L) will be increased by $15,000 for the last clean-up phase bringing the total cost of program to approximately $140,000.

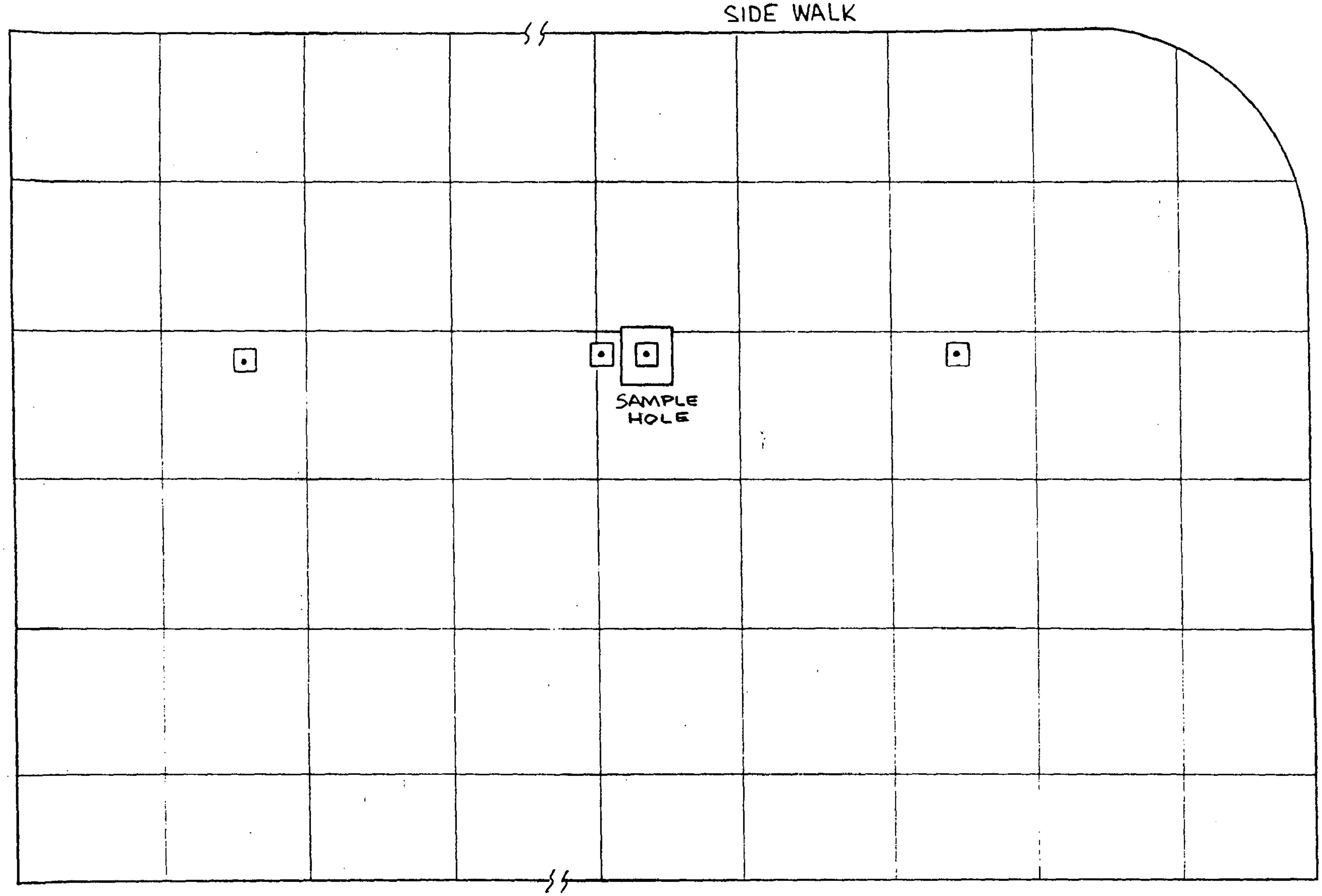
FIGURE NO. 2

TCE-CONTAMINATED WATER SPILLS

DRILLING / SAMPLING PLAN

SOUTH SIDE
AREA 2

SURFACE SAMPLE



SCALE: 1" = 5'-0"

MSC
4-15-85

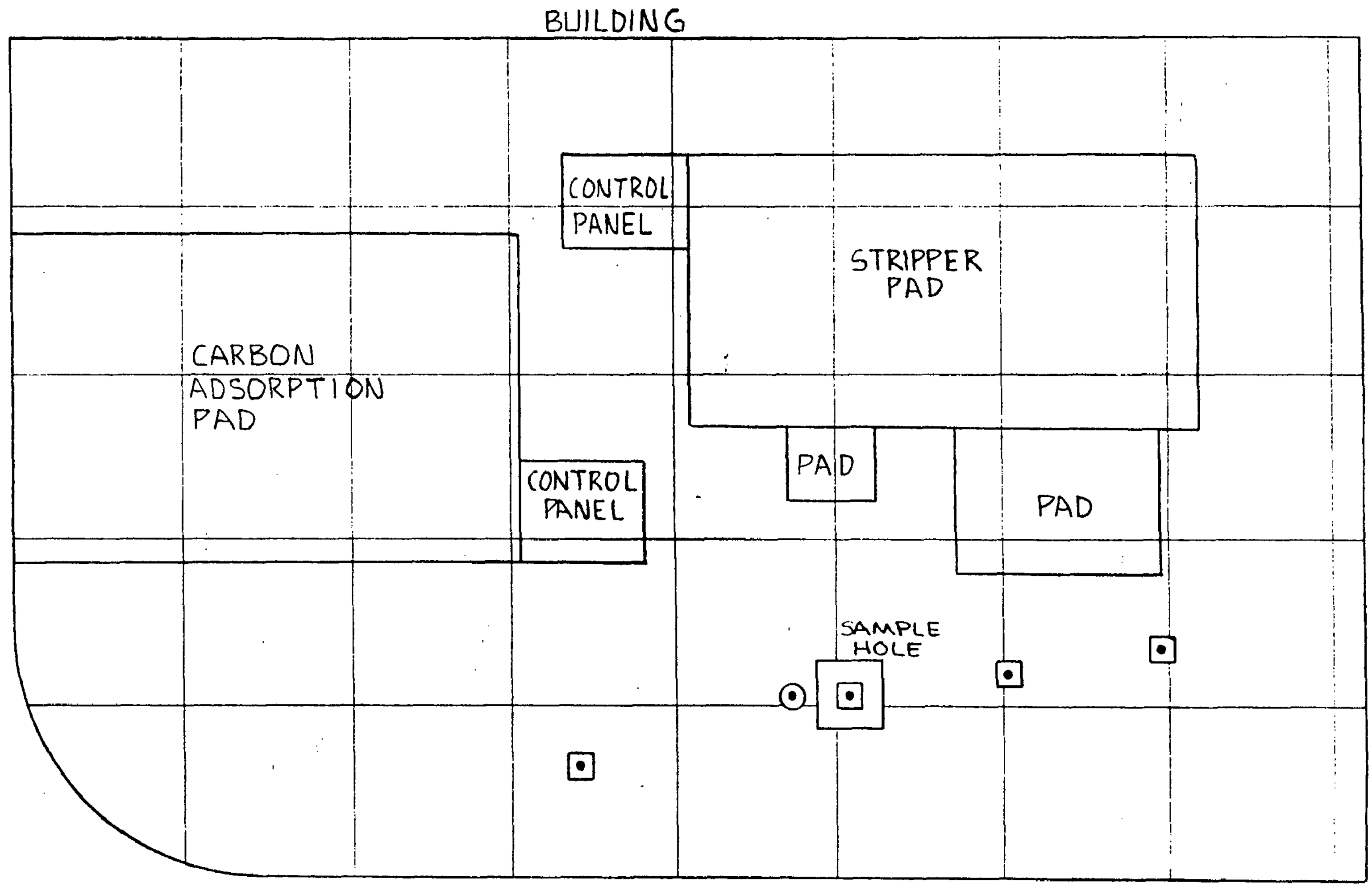
FIGURE NO. 1

ICE·CONTAMINATED WATER SPILLS

DRILLING SAMPLING PLAN

NORTH SIDE
AREA 1

⊙ 2" CORE SAMPLE DRILLING   ⊡ SURFACE SAMPLE

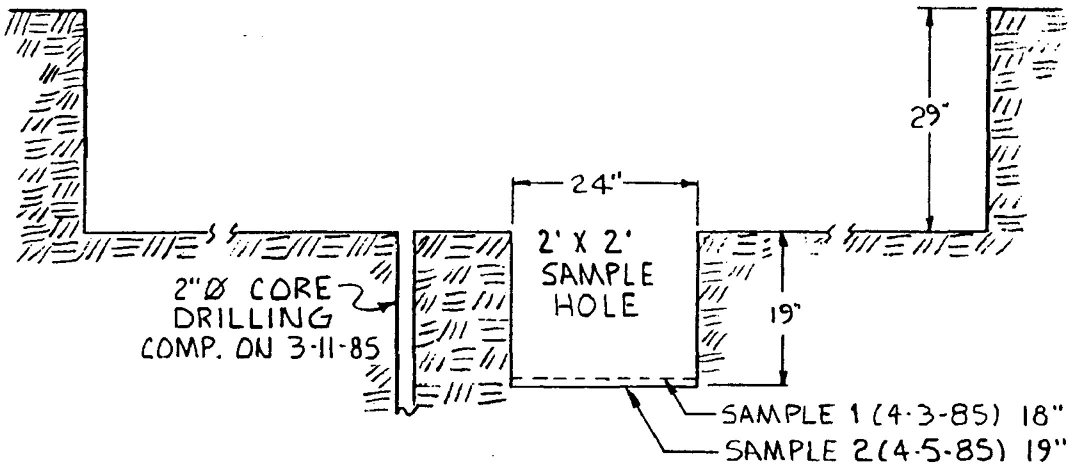


SCALE: 1" = 5'·0"

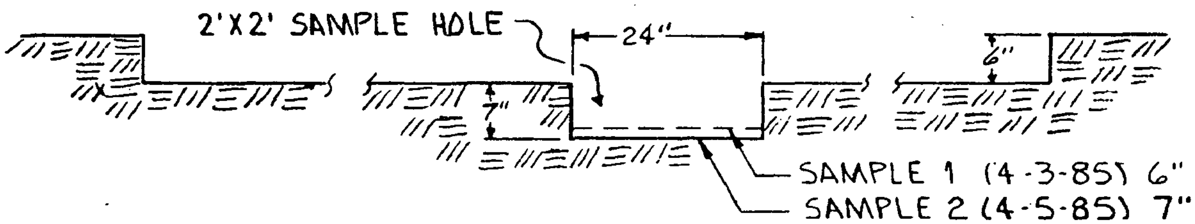
MSC
4·15·85

Koppers021770

SAMPLE HOLES
VIEW OF CROSS SECTIONS



AREA 1



AREA 2

MSC
4-15-85

March 19, 1985

Ms. Janet A. Gillaspie
Regional Manager
Northwest Region
Department of Environmental Quality
Post Office Box 1760, Portland 97207
522 S.W. Fifth Avenue
Portland, Oregon 97204

Dear Ms. Gillaspie:

Receipt of your letter of March 11, 1985 is acknowledged. Enclosed is a summary of TCE Stripper Operations setting forth the data upon which our response is based.

On the basis of your oral advice regarding the contents of your letter, Wacker Siltronic Corporation embarked on a testing program which included drilling on the site over the weekend of March 9 and 10, 1985. As you may know, we coordinated our sampling program with Renato Dulay. Attachment (O) to the enclosed summary includes a diagram of the sampling program which was approved by Mr. Dulay. We have now completed the sampling as outlined in our letter of March 11, 1985, to Mr. Dulay. Attachment (Q) shows the results of our sampling program. You will note that very little TCE remains on the surface and that the levels are less than one part per million at a relatively shallow depth.

We have determined the maximum amount of TCE which could have been spilled on our property from April, 1984, the effective date of the current regulations. Attachment (G) sets forth our computations and is based upon a worst-case analysis. Promptly after the December 31, 1984 spill occurred we took steps to deal with the situation. There is a chronology of events related to the December spills included in the enclosed summary. Attachment (I) is the report and recommendation of Environmental Emergency Services Company, a copy of which has previously been provided to you.

We have removed substantially more material than was recommended by Environmental Emergency Services Company. Attachment (J) shows the extent of our removal program. Based upon concentrations of TCE in Environmental Emergency Services soil samples, and more recent soil samples, Attachment (Q), we have determined that removal of the soil in January would have accomplished the removal of all waste material spilled since April 1984, Attachment (R). Therefore, we believe that we have completed removal of the waste as required by OAR 340-108-010 (2).

Your letter refers to removal of spill residue to background levels. We assume that when you wrote your letter you did not have in mind that the present facility, which was constructed in late 1982, replaced equipment which had been subject to corrosion and had experienced leaks on occasion. Therefore, there was undoubtedly some TCE in the ground at the effective date of the current DEQ regulations.

We are confident that the remaining amounts of TCE disclosed by our sampling are a result of prior incidents. This view is supported not only by the amount of TCE which has been removed from the site, but also by the fact that the ground was frozen when the December 31 spill occurred and there was a minimal amount of rainfall between the date of that spill and our removal of the affected material.

As noted above, we have removed the spill residue as required by DEQ regulations. We interpret the regulations to justify additional requirements only when there is a demonstrated hazard to the environment. In view of the small amounts of TCE remaining from these prior spills, it is apparent that there is no hazard to the environment.

Attachment (D) shows our containment plan to prevent any damage from future spills. As noted on the chronology of events, we already have received bids for these improvements and are ready to proceed with construction. We request your consent to filling the excavated areas and construction of the containment improvements as soon as possible so that we can put our facility back into operation.

Yours very truly,

WACKER SILTRONIC CORPORATION

James R. Ellis
Acting Facilities Manager

JE:jsm

Enclosures

COFFEY LABORATORIES, INC.
4914 N.E. 122nd Ave.
Portland, OR 97230
Phone: (503) 254-1794

April 9, 1985
Log #A850403-H

Wacker Siltronics
P. O. Box 03180
Portland, Oregon 97203
Attention: Jim Ellis

Analysis Requested: Trichloroethylene in Soil

Samples Received: April 3, 1985

Methodology: Carbon Disulfide Extraction

SAMPLE ID	TRICHLOROETHYLENE
Area 1, Sample 1 (depth 18")	< 1.0 mg/kg
Area 2, Sample 1 (depth 6")	< 1.0 mg/kg
Area 1, Sample 2 (depth ~~18~~") 19" SRE	< 1.0 mg/kg
Area 2, Sample 2 (depth ~~8~~") 7" SRE	< 1.0 mg/kg

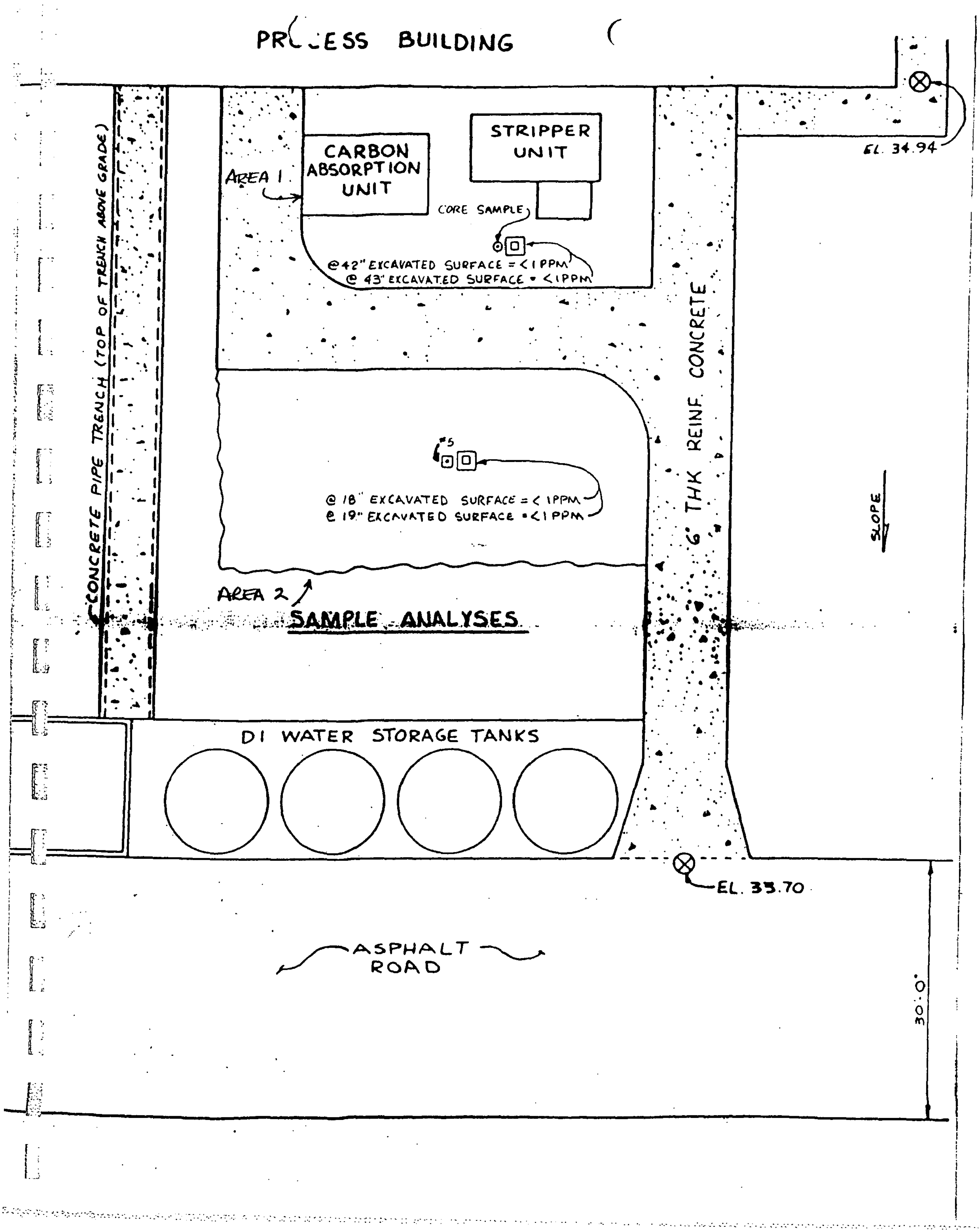
< denotes "less than"

Sincerely,

Susan M. Coffey

Susan M. Coffey,
President

SMC/db


PROCESS BUILDING
CARBON ABSORPTION UNIT
STRIPPER UNIT
AREA 1
CORE SAMPLE
@ 42" EXCAVATED SURFACE = <1 PPM
@ 43" EXCAVATED SURFACE = <1 PPM
EL. 34.94
CONCRETE PIPE TRENCH (TOP OF TRENCH ABOVE GRADE)
#5
@ 18" EXCAVATED SURFACE = <1 PPM
@ 19" EXCAVATED SURFACE = <1 PPM
6" THK REINF CONCRETE
SLOPE
AREA 2
SAMPLE ANALYSES
DI WATER STORAGE TANKS
EL. 33.70
ASPHALT ROAD
30'-0"

To: Mr. James K Ellis
Wacker Siltronic corporation
P.O. Box 03180, Portland, Or 97203

From: Renato C Dulay
NWR - DEQ
P. O Box 1760 Portland, Or 97207

Subject

MESSAGE Date April 8 1985

This is to supplement our letter to you dated April 5, 1985 regarding the additional cleanup at the spill area.

The additional excavation should be done in the shaded areas as shown in the attached figures 1 and 2.

If you have further questions feel free to contact me at 229-5393

Signed Renato C Dulay

REPLY Date 19

Signed

Wilson Jones Company

RECIPIENT—RETAIN WHITE COPY, RETURN PINK COPY

VICTOR ATIYEH
GOVERNOR

Department of Environmental Quality

522 S.W. FIFTH AVENUE, BOX 1760, PORTLAND, OREGON 97207 PHONE (503) 229-5696

April 5, 1985

Mr. James R. Ellis
Wacker Siltronic Corporation
P.O. Box 03180
Portland, Oregon 97203

Re: HW - Wacker Siltronic
Corporation
ORD 096253737
Multnomah County

Dear ~~Mr. Ellis~~ Jim:

We have reviewed your spill sampling report dated March 19, 1985. Wacker conducted a testing program in the spill area which included one core hole and three surface samples in area 1 and three surface samples in area 2. The sampling data showed 3.9 ppm of TCE at 9 to 18 inches depth in area 1 and 1.6 ppm TCE on the surface at area 2.

The material spilled was a listed waste and must therefore be removed to background levels (<1 ppm) or delisted. If you choose to do cleanup to background levels we recommend the following:

1. Excavate to one and one-half feet depth in area 1 south and in front of the stripper unit.

2. Excavate to half a foot depth around sampling point number 5 in area 2.

3. After excavation, take one surface soil sample in each area for TCE analysis.

Should you have further questions, please call Mr. Renato C. Dulay at 229-5393.

Sincerely,

Janet Gillaspie

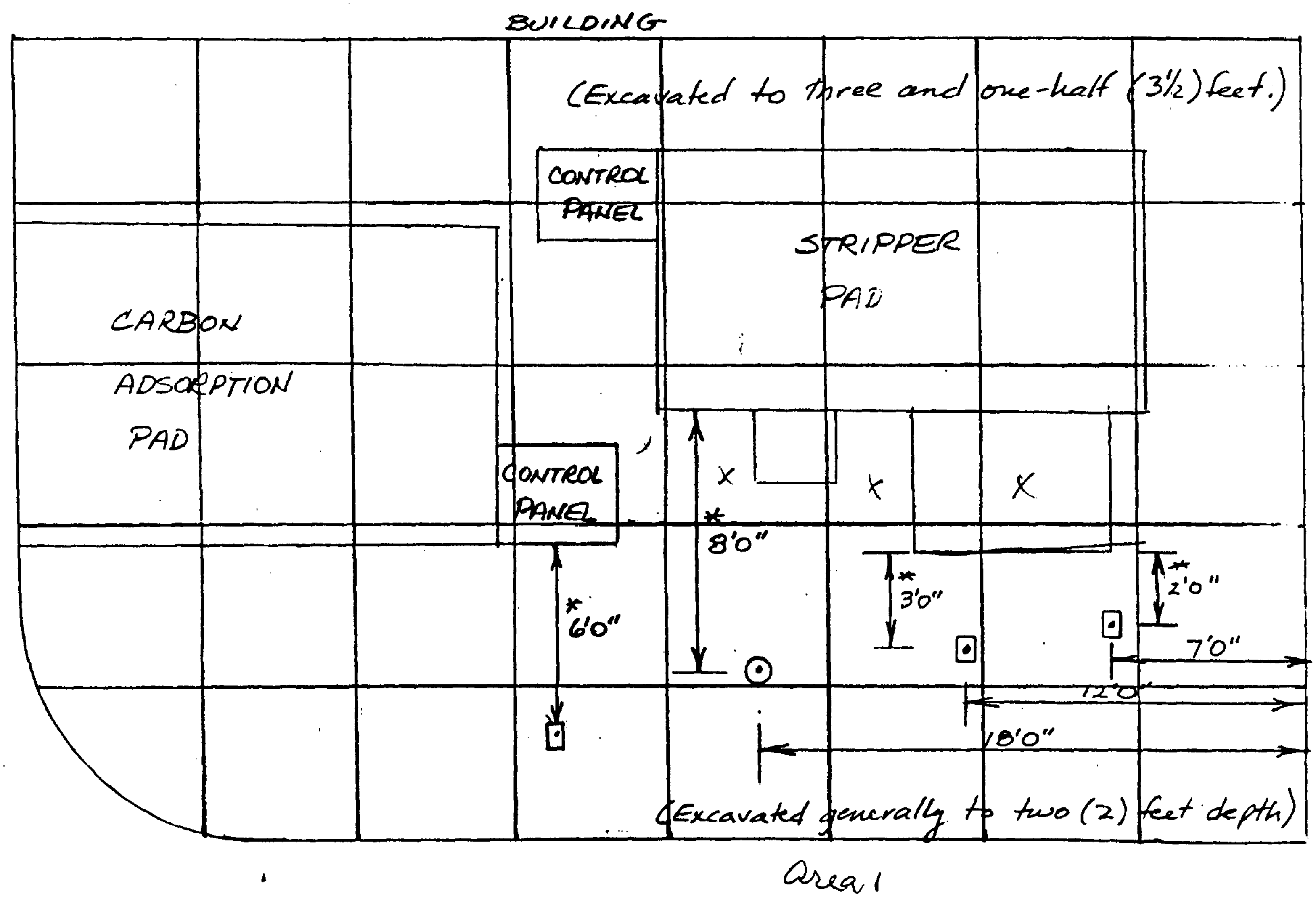
Janet A. Gillaspie
Regional Manager
Northwest Region

JAG/emc
cc: Hazardous and Solid Waste Division, DEQ

Koppers021778

Figure 1 DRILLING / SAMPLING PLAN

⊙ 2" CORE SAMPLE DRILLING ⊡ SURFACE SAMPLE



* ALL MEASUREMENTS FROM EDGE OF PAD AT SURFACE

SCALE: 1" = 5'0"

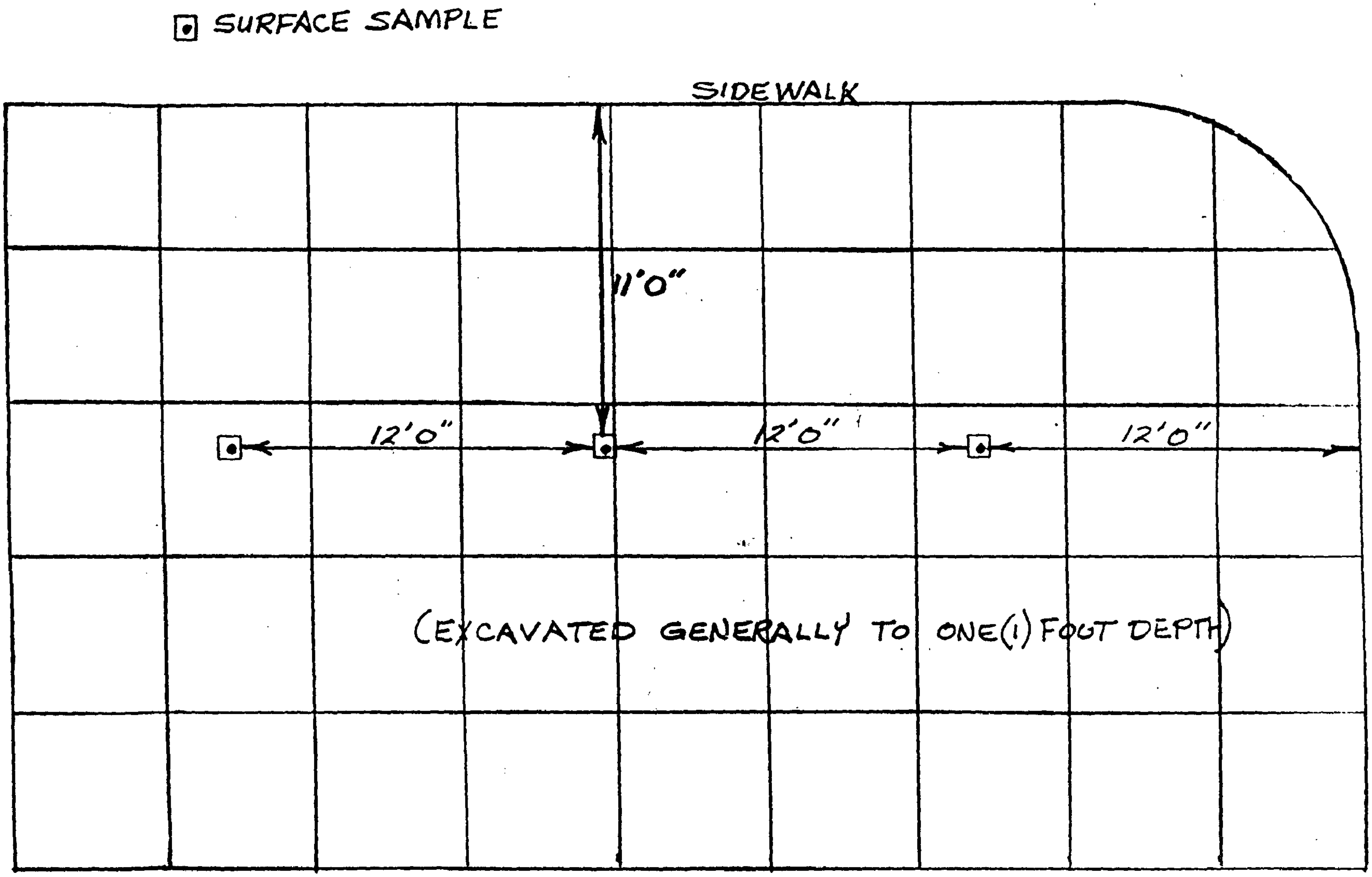
JRE

3-11-85

Figure 2

SOUTH SIDE

DRILLING/SAMPLING PLAN

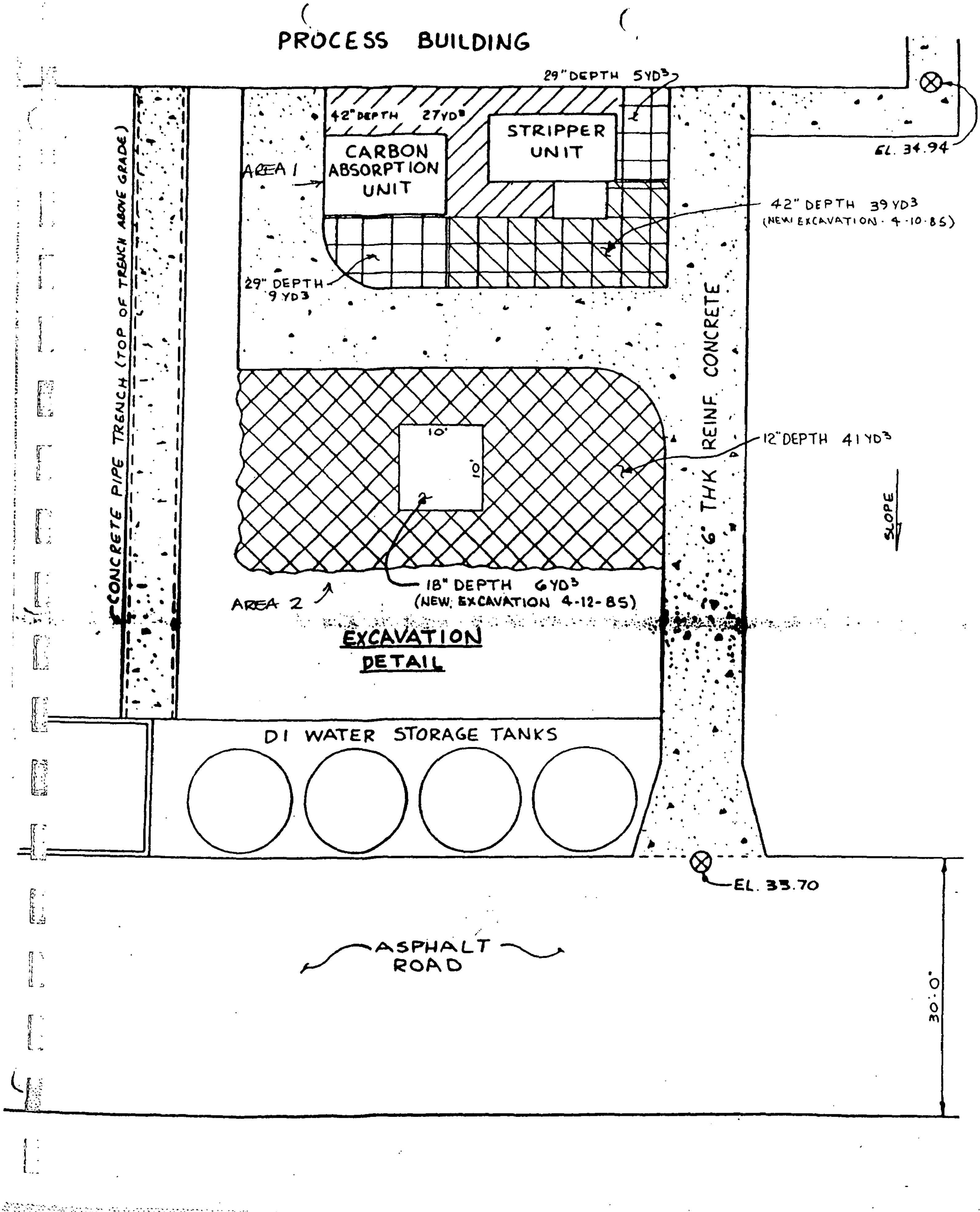


area 2

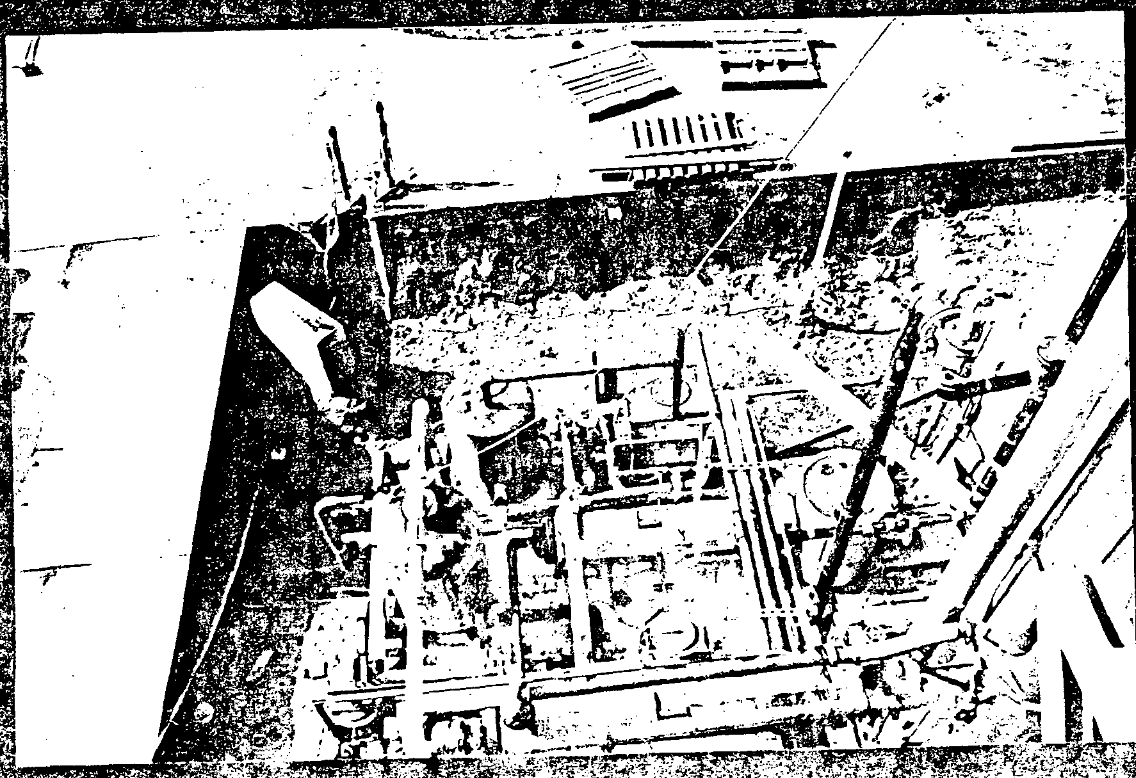
SCALE: 1" = 5'0"

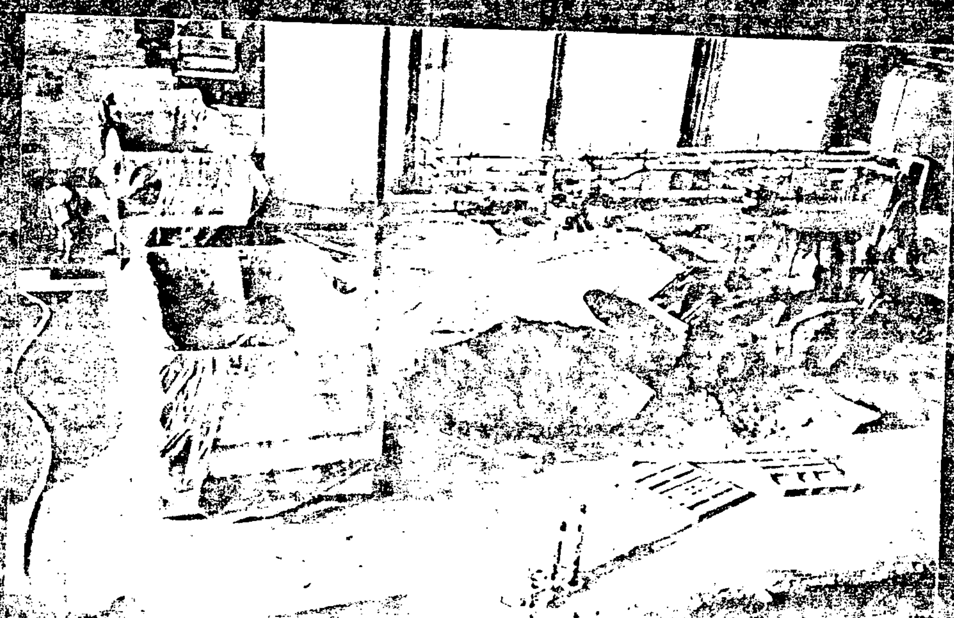
JZE

3-11-85



Koppers021781





STATE OF OREGON

DEPARTMENT OF ENVIRONMENTAL QUALITY — INTEROFFICE MEMO

TO: Fred Bolton
Larry Patterson
Glen Carter
Andy Schaedel
Rick Gates
Jan Whitworth
Neil Mullane

DATE: November 8, 1985

FROM: Janet A. Gillaspie

SUBJECT: Doane's Lake

We have received the groundwater monitoring reports from the wells Wacker Siltronics installed on their property to determine if past filling practices or pollution from neighbors was causing a problem on their property. The results are attached, along with a summary from Larry Patterson. Also attached is data from the adjacent Kopper's property.

We have scheduled a meeting for November 13, at 10:30 a.m. in room 4A to review these results and reach consensus on the next step. We will be also meeting with Pat Storm from EPA, Seattle's Superfund program the following day. Pat is the project manager for the adjacent Gould Battery Superfund cleanup. We need to reach consensus with EPA on the project also. The meeting with EPA is scheduled for the morning of November 14. Additional details will be forthcoming.

Should you have questions, or be unable to make the meeting, please call me at ext. 5292.

JAG:r
RR37
Attachment

The EPA meeting is set for 10:00 Thursday, 14 NOV 85, EPA conference room

STATE OF OREGON

DEPARTMENT OF ENVIRONMENTAL QUALITY — INTEROFFICE MEMO

TO: Janet Gillaspie, NWR

DATE: October 22, 1985

FROM: Larry Patterson, WQ

SUBJECT: Doane Lake

On October 14, 1985, Jim Ellis of Wacker Siltronic delivered a copy of the groundwater monitoring data from their proposed construction site. Copies of the report were given to NWR, DEQ - Lab, and EPA - Region X for comment.

The data indicated that: 1) metal levels are all within drinking water standards, 2) chlorophenols are nondetectable, and 3) coal tar constituents are present in low concentrations. The soils data which was submitted earlier in the year tends to support the findings of the groundwater data.

The materials detected in the soil and groundwater at the Wacker site most likely are associated with past activities at the Koppers/N.W. Natural Gas site. The coal tar constituents are very similar to the materials found at the Pacific Power & Light Astoria Service Center. There are numerous environmental similarities between the sites at Astoria and Doane Lake.

The feasibility report prepared by Camp Dresser & McKee Inc., for PP&L was a good report. It presents a detailed picture of the Astoria site, the environmental contaminants present, the various remedial action alternatives, and the associated risks. It is suggested that the owner(s) of the Koppers/N.W. Natural Gas property be required to conduct a similar study. To provide a complete picture, it may be necessary to install additional groundwater monitoring devices on the west end (downstream side) of Walker Siltronic's property. This could most likely be done without interfering with any of Walker's proposed construction activities.

Upon receipt of comments from EPA and other DEQ personnel, we should get together to formulate a response to Wacker.

LDPHh
WH462

Phenol analyses were conducted in accordance with Method 4202, Methods for Chemical Analysis of Water & Wastes, U.S.E.P.A., March 1979.

A summary of these laboratory results is presented in the attached Table 1. Wacker Siltronic has reviewed these data carefully and has concluded that the low level of critical contaminants pose no threat to the environment and to human health and safety. We request that you concur in our view that there is no environmental or health threat so that we can resume design of construction projects for this site with assurance that we will have no interference to the future operations attributable to the existing environmental site conditions.

After you have had an opportunity to review the enclosed summary we would like to discuss it with you.

Very truly yours,

WACKER SILTRONIC CORPORATION

James R. Ellis

James R. Ellis
Polysilicon Project Manager

JRE:ll

Enclosure

cc: Jim Disorbo
Jim Harper
John Pittman
File

EKC
JAG

Wacker Siltronic Corporation
P O Box 03180
Portland, OR 97203
7200 N W Front Ave
Portland, OR 97210
Phone (503) 243-2020
TWX 910-464-4777
FAX 503 226-0052

October 10, 1985

Mr. Larry Patterson
Industrial Wastewater Engineer
Department of Environmental Quality
Post Office Box 1760
Portland, Oregon 97207

WATER QUALITY CONTROL

Dear Larry:

Subject: Proposed Polysilicon Site - Groundwater Analyses

As part of an on-going site investigation, Wacker Siltronic Corporation arranged for CH2M-Hill and a drilling subcontractor, Geo Tech Explorations Inc. to install seven (7) monitoring wells on the subject site during April, 1985, (see attached Figure 1 for well locations). Soil samples, approximately 18 inches in length were removed from each 5-foot increment of penetration during the process of drilling the wells. All borings, 6 1/4 inches in diameter, were drilled to a depth of approximately 35-40 feet, and developed as ground water monitoring wells.

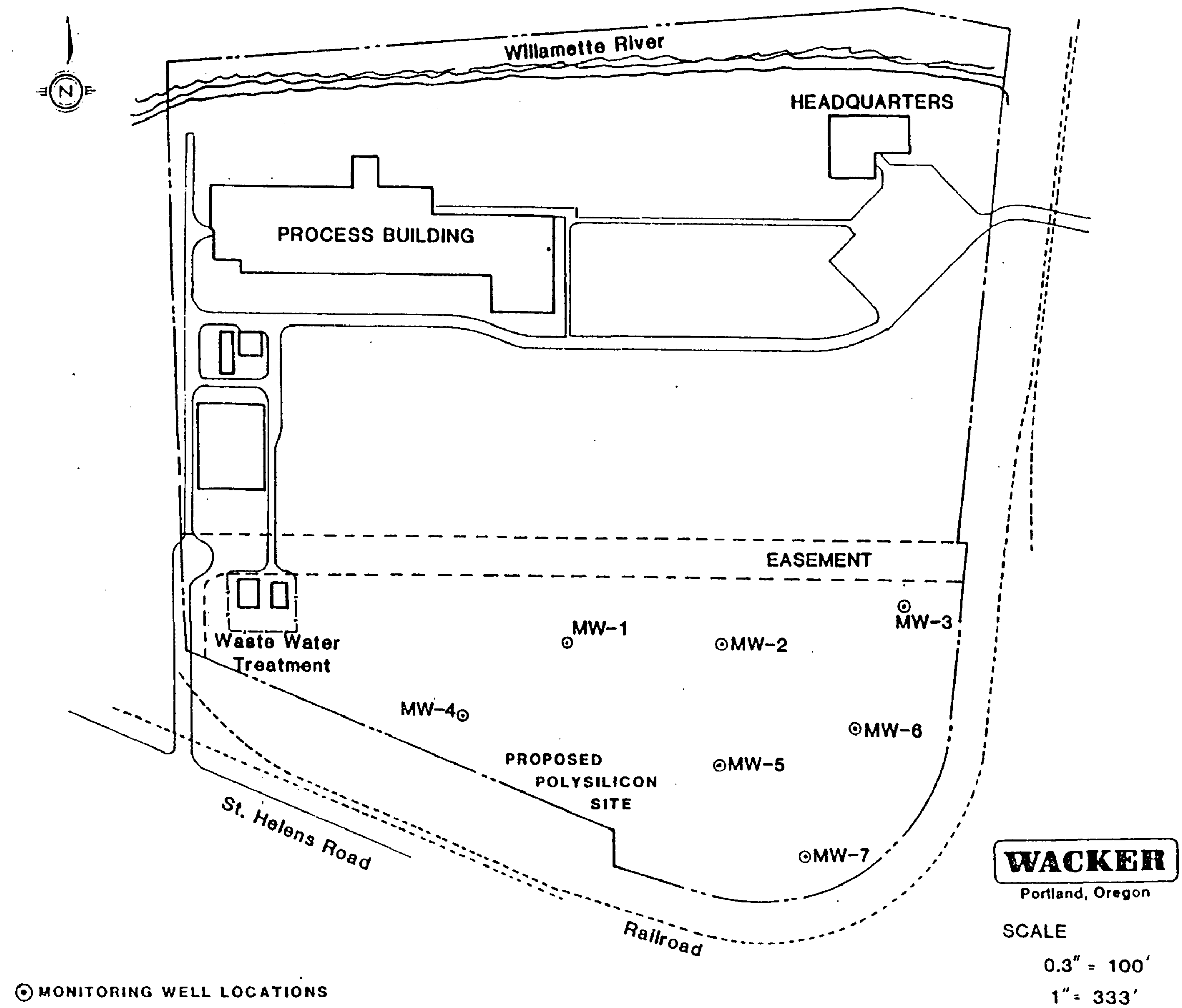
During April, a total of nine (9) soil samples were selected and analyzed to determine if chemicals of the following categories were in the soil:

a.) Polyaromatic hydrocarbons,
b.) Heavy metals,
c.) Selected pesticides, and,
d.) Petroleum products

The results of these soil analyses were submitted to the Department of Environmental Quality during June, 1985.

During July 31 and August 1, 1985 these same seven (7) monitoring wells were purged and sampled in accordance with EPA-approved procedures. Resulting groundwater samples were submitted to Laucks Testing Laboratories, Inc., Seattle, on August 1 to be analyzed for priority pollutants in accordance with Test Methods for Evaluating Solid Waste, (SW-846), U.S.E.P.A., 1982, Methods 8240 (volatile organics), 8270 (semi-volatile extractables), 8080, (pesticides and PCB's), 9010 (cyanide), and the 7000 series (metals analysis).

Figure 1 - MONITORING WELL LOCATIONS ON PROPOSED POLYSILICON SITE



Koppers021788

TABLE 1

Groundwater Analyses
Wacker Siltronic Corp.
Proposed Polysilicon Site
(Concentrations expressed in parts per million)

Inorganics	MW-1	MW-2	MW-3	MW-4	MW-5	MW-6	MW-7
Antimony	<.005	<.005	<.005	<.005	<.005	<.005	<.005
Arsenic	.005	<.005	.005	<.005	<.005	.010	<.005
Beryllium	<.001	<.001	<.001	<.001	<.001	<.001	<.001
Cadmium	.003	.002	.001	.003	.002	.002	<.001
Chromium	.010	.008	.005	.009	.006	.006	.004
Copper	.002	.007	.001	.002	.002	.001	.004
Lead	.052	.040	.025	.049	.028	.030	.020
Mercury	<.001	<.001	<.001	<.001	<.001	<.001	<.001
Nickel	.010	.007	.005	.011	.006	.006	.008
Selenium	<.005	<.005	<.005	<.005	<.005	<.005	<.005
Silver	<.001	<.001	<.001	<.001	<.001	<.001	.001
Thallium	<.005	<.005	<.005	<.005	<.005	<.005	<.005
Zinc	.026	.016	.017	.050	.011	.011	.047
Total Cyanide	.180	.058	.130	.930	.130	.040	.033
Total Phenol	.072	.013	.006	<.005	<.005	.030	<.005

Koppers021789

TABLE 1

Groundwater Analyses
Wacker Siltronic Corp.
Proposed Polysilicon Site
(Concentrations expressed in parts per million)

Volatile Organics (by GC/MS)	MW-1	MW-2	MW-3	MW-4	MW-5	MW-6	MW-7
Chloromethane	<.010	<.001	<.001	<.001	<.001	<.001	<.001
Bromomethane	<.010	<.001	<.001	<.001	<.001	<.001	<.001
Vinyl Chloride	<.010	<.001	<.001	<.001	<.001	<.001	<.001
Chloroethane	<.010	<.001	<.001	<.001	<.001	<.001	<.001
Methylene Chloride	.088	T	T	T	.021	T	T
Acrolein	<.100	<.001	<.010	<.010	<.010	<.010	<.010
Acetone	.120	<.001	<.001	.021	.049	<.001	<.001
Acrylonitrile	<.100	<.001	<.010	<.010	<.010	<.010	<.010
Carbon Disulfide	<.010	<.001	<.001	<.001	<.001	<.001	<.001
1,1-Dichloroethylene	<.010	<.001	<.001	<.001	<.001	<.001	<.001
1,1-Dichloroethane	<.010	<.001	<.001	<.001	<.001	<.001	<.001
trans-1,2-Dichloroethylene	<.010	<.001	<.001	<.001	<.001	<.001	<.001
Chloroform	<.010	<.001	<.001	<.001	<.001	<.001	<.001
2-Butanone	<.010	<.001	<.001	<.001	<.001	<.001	<.001
1,2-Dichloroethane	<.010	<.001	<.001	<.001	<.001	<.001	<.001
1,1,1-Trichloroethane	<.010	<.001	<.001	<.001	<.001	<.001	<.001
Vinyl Acetate	<.010	<.001	<.001	<.001	<.001	<.001	<.001
Bromodichloromethane	<.010	<.001	<.001	<.001	<.001	<.001	<.001
Carbon Tetrachloride	<.010	<.001	<.001	<.001	<.001	<.001	<.001
1,2-Dichloropropane	<.010	<.001	<.001	<.001	<.001	<.001	<.001
Trichloroethylene	<.010	<.001	<.001	<.001	<.001	<.001	<.001
Benzene	1.100	.100	.039	<.001	<.001	1.200	<.001
Chlorodibromomethane	<.010	<.001	<.001	<.001	<.001	<.001	<.001
1,1,2-Trichloroethane	<.010	<.001	<.001	<.001	<.001	<.001	<.001
2-Chloroethyl vinyl ether	<.010	<.001	<.001	<.001	<.001	<.001	<.001
Bromoform	<.010	<.001	<.001	<.001	<.001	<.001	<.001
4-Methyl-2-pentanone	<.010	<.001	<.001	<.001	<.001	<.001	<.001
2-Hexanone	<.010	<.001	<.001	<.001	<.001	<.001	<.001
1,1,2,2,-Tetrachloroethane	<.010	<.001	<.001	<.001	<.001	<.001	<.001

Koppers021790

TABLE 1

Groundwater Analyses
Wacker Siltronic Corp.
Proposed Polysilicon Site
(Concentrations expressed in parts per million)

Volatile Organics (Cont.)	MW-1	MW-2	MW-3	MW-4	MW-5	MW-66	MW-7
Tetrachloroethylene	<.010	<.001	<.001	<.001	<.001	<.001	<.001
Toluene	<.010	<.001	<.001	<.001	<.001	<.027	<.001
Chlorobenzene	<.010	<.001	<.001	<.001	<.001	<.001	<.001
trans-1,3-Dichloropropene	<.010	<.001	<.001	<.001	<.001	<.001	<.001
Ethylbenzene	.410	<.036	<.001	T	<.001	.390	<.001
cis1,3-Dichloropropene	<.010	<.001	<.001	<.001	<.001	<.001	<.001
Styrene	<.010	<.001	<.001	<.001	<.001	<.001	<.001
Total Xylenes	1.200	.032	T	.015	<.001	.430	<.001

Koppers021791

TABLE 1

Groundwater Analyses
Wacker Siltronic Corp
Proposed Polysilicon Site
(Concentrations expressed in parts per million)

Extractables (by GC/MS)	MW-1	MW-2	MW-3	MW-4	MW-5	MW-6	MW-7
N-nitrosodimethylamine	<.001	<.001	<.001	<.001	<.001	<.001	<.001
Bis(2-chloroethyl)ether	<.001	<.001	<.001	<.001	<.001	<.001	<.001
2-Chlorophenol	<.001	<.001	<.001	<.001	<.001	<.001	<.001
Phenol	T	<.001	<.001	<.001	<.001	<.001	<.001
1,3-Dichlorobenzene	<.001	<.001	<.001	<.001	<.001	<.001	<.001
1,4-Dichlorobenzene	<.001	<.001	<.001	<.001	<.001	<.001	<.001
1,2-Dichlorobenzene	<.001	<.001	<.001	<.001	<.001	<.001	<.001
Bis(2-chloroisopropyl)ether	<.001	<.001	<.001	<.001	<.001	<.001	<.001
Hexachloroethane	<.001	<.001	<.001	<.001	<.001	<.001	<.001
N-nitroso-di-n-propylamine	<.001	<.001	<.001	<.001	<.001	<.001	<.001
Nitrobenzene	<.001	<.001	<.001	<.001	<.001	<.001	<.001
Isophorone	<.001	<.001	<.001	<.001	<.001	<.001	<.001
2-Nitrophenol	<.001	<.001	<.001	<.001	<.001	<.001	<.001
2,4-Dimethylphenol	.027	<.001	<.001	<.001	<.001	<.001	<.001
Bis(2-chloroethoxy)methane	<.001	<.001	<.001	<.001	<.001	<.001	<.001
2,4-Dichlorophenol	<.001	<.001	<.001	<.001	<.001	<.001	<.001
1,2,4-Trichlorobenzene	<.001	<.001	<.001	<.001	<.001	<.001	<.001
Naphthalene	<.001	1.900	.600	.350	.058	2.100	T
Hexachlorobutadiene	<.001	<.001	<.001	<.001	<.001	<.001	<.001
4-Chloro-m-cresol	<.001	<.001	<.001	<.001	<.001	<.001	<.001
Hexachlorocyclopentadiene	<.001	<.001	<.001	<.001	<.001	<.001	<.001
2,4,6-Trichlorophenol	<.001	<.001	<.001	<.001	<.001	<.001	<.001
2-Chloronaphthalene	<.001	<.001	<.001	<.001	<.001	<.001	<.001
Acenaphthylene	.088	.200	T	T	.031	.032	<.001
Dimethylphthalate	<.001	<.001	<.001	<.001	<.001	<.001	<.001
2,6-Dinitrotoluene	<.001	<.001	<.001	<.001	<.001	<.001	<.001
Acenaphthene	.270	.940	.086	.350	.054	.200	.019
2,4-Dinitrophenol	<.001	<.001	<.001	<.001	<.001	<.001	<.001

Koppers021792

TABLE 1

Groundwater Analyses
Wacker Siltronic Corp.
Proposed Polysilicon Site
(Concentrations expressed in parts per million)

Extractables, (Cont.)	MW-1	MW-2	MW-3	MW-4	MW-5	MW-6	MW-7
2,4-Dinitrotoluene	<.001	<.001	<.001	<.001	<.001	<.001	<.001
4-Nitrophenol	<.001	<.001	<.001	<.001	<.001	<.001	<.001
Fluorene	.095	.440	.013	.053	.012	.035	<.001
4-Chlorophenyl phenyl ether	<.001	<.001	<.001	<.001	<.001	<.001	<.001
Diethylphthalate	<.001	<.001	<.001	<.001	<.001	<.001	<.001
4,6-Dinitro-o-cresol	<.001	<.001	<.001	<.001	<.001	<.001	<.001
1,2-diphenylhydrazine	<.001	<.001	<.001	<.001	<.001	<.001	<.001
4-Bromophenyl phenyl ether	<.001	<.001	<.001	<.001	<.001	<.001	<.001
Hexachlorobenzene	<.001	<.001	<.001	<.001	<.001	<.001	<.001
Pentachlorophenol	<.001	<.001	<.001	<.001	<.001	<.001	<.001
Phenanthrene	.180	1.630	.013	.028	.021	.056	T
Anthracene	.039	.630	T	T	T	T	<.001
Dibutylphthalate	<.001	<.001	<.001	<.001	<.001	<.001	<.001
Fluoranthene	.072	1.300	T	.018	T	T	.023
Pyrene	.081	1.430	T	.014	.010	.010	.011
Benzidine	<.001	<.001	<.001	<.001	<.001	<.001	<.001
Butyl benzyl phthalate	<.001	<.001	<.001	<.001	<.001	<.001	<.001
Benzo(a)anthracene	.031	.480	T	T	T	T	.012
Chrysene	.036	.650	T	T	T	T	.015
3,3'-Dichlorobenzidine	<.001	<.001	<.001	<.001	<.001	<.001	<.001
Bis(2-ethylhexyl)phthalate	T	.024	T	.013	T	T	T
N-nitrosodiphenylamine	<.001	<.001	<.001	<.001	<.001	<.001	<.001
Di-n-octyl phthalate	T	<.001	T	T	T	<.001	T
Benzo(b)fluoranthene	.024	.400	<.001	T	T	T	T
Benzo(k)fluoranthene	T	.120	<.001	<.001	<.001	T	T
Benzo(a)pyrene	.040	.760	T	T	T	T	.010
Indeno(1,2,3-cd)pyrene	.020	.300	<.001	T	T	T	T
Dibenzo(ah)anthracene	<.001	T	<.001	<.001	<.001	<.001	<.001

Koppers021793

TABLE 1

Groundwater Analyses
Wacker Siltronic Corp.
Proposed Polysilicon Site
(Concentrations expressed in parts per million)

Extractables: (Cont.)	MW-1	MW-2	MW-3	MW-4	MW-5	MW-6	MW-7
Benzo(ghi)perylene	.025	.370	<.001	T	T	T	T
Aniline	<.001	<.001	<.001	<.001	<.001	<.001	<.001
Benzoic Acid	<.001	<.001	<.001	<.001	<.001	<.001	<.001
Benzyl Alcohol	<.001	<.001	<.001	<.001	<.001	<.001	<.001
4-Chloroaniline	<.001	<.001	<.001	<.001	<.001	<.001	<.001
Dibenzofuran	.077	.075	T	.088	T	.014	T
2-Methylnaphthalene	<.001	.260	.067	.019	.012	.041	<.001
2-Methylphenol	<.001	<.001	<.001	<.001	<.001	<.001	<.001
4-Methylphenol	<.001	<.001	<.001	<.001	<.001	<.001	<.001
2-Nitroaniline	<.001	<.001	<.001	<.001	<.001	<.001	<.001
3-Nitroaniline	<.001	<.001	<.001	<.001	<.001	<.001	<.001
4-Nitroaniline	<.001	<.001	<.001	<.001	<.001	<.001	<.001
2,4,5-Trichlorophenol	<.001	<.001	<.001	<.001	<.001	<.001	<.001

Koppers021794

TABLE 1

Groundwater Analyses
Wacker Siltronic Corp.
Proposed Polysilicon Site
(Concentrations expressed in parts per million)

Pesticides (by GC/ECD)	MW-1	MW-2	MW-3	MW-4	MW-5	MW-6	MW-7
alpha-BHC	<.0002	<.0002	<.00002	.00024	<.00002	.00006	<.00002
beta-BHC	<.0002	<.0002	<.00002	<.00002	<.00002	<.00002	<.00002
delta-BHC	<.0002	<.0002	<.00002	<.00002	<.00002	<.00002	<.00002
gamma-BHC (lindane)	<.0002	<.0002	<.00002	<.00002	<.00002	<.00002	<.00002
heptachlor	<.0002	<.0002	<.00002	<.00002	<.00002	<.00002	<.00002
aldrin	<.0002	<.0002	<.00002	<.00002	<.00002	<.00002	<.00002
heptachlor epoxide	<.0002	<.0002	<.00002	<.00002	<.00002	<.00002	<.00002
dieldrin	<.0002	<.0002	<.00002	<.00002	<.00002	<.00002	<.00002
4,4'-DDE	<.0002	<.0002	<.00002	<.00002	<.00002	<.00002	<.00002
4,4'-DDD	<.0004	<.0004	<.00004	<.00004	<.00004	<.00004	<.00004
endosulfan sulfate	<.0004	<.0004	<.00004	<.00004	<.00004	<.00004	<.00004
4,4'-DDT	<.0004	<.0004	<.00004	<.00004	<.00004	.00028	<.00004
chlordane	<.0004	<.0004	<.00004	<.00004	<.00004	<.00004	<.00004
alpha endosulfan	<.0004	<.0004	<.00004	<.00004	<.00004	<.00004	<.00004
beta endosulfan	<.0004	<.0004	<.00004	<.00004	<.00004	<.00004	<.00004
endrin	<.0004	<.0004	<.00004	<.00004	.00002	<.00004	<.00004
endrin aldehyde	<.0004	<.0004	<.00004	<.00004	<.00004	<.00004	<.00004
toxaphene	<.050	<.050	<.004	<.004	<.004	<.004	<.004
PCB 1016	<.010	<.010	<.001	<.001	<.001	<.001	<.001
PCB 1221	<.010	<.010	<.001	<.001	<.001	<.001	<.001
PCB 1232	<.010	<.010	<.001	<.001	<.001	<.001	<.001
PCB 1242	<.010	<.010	<.001	<.001	<.001	<.001	<.001
PCB 1248	<.010	<.010	<.001	<.001	<.001	<.001	<.001
PCB 1254	<.010	<.010	<.001	<.001	<.001	<.001	<.001
PCB 1260	<.010	<.010	<.001	<.001	<.001	<.001	<.001

Key

< indicates "less than"
Trace = 1-10 ug/L

Koppers021795

~~Koppers~~ NW Natural Gas

Pb 16 23

CN 19.4

Dimethylbenzene

Koppers – Wells

Pb

236, 22, 23, 47 12-19-84

1,2 Dimethylbenzene 2600, 3.4, 160

Pb, As, Cr – EP Toxicity – CN

listed organic compounds

Enough wells to monitor GW gradient

10 ft – 100 ft

Soil cores while EP tox

Wells at various depths 10 – 40 ft

NW Natural Gas do they own all of Koppers

Check NW Nat Gas file for boom or slurry wall

that pile, with large amounts of overburden from the neighboring Rivergate Rock facility, was mixed with the ponded tar. After covering with additional overburden the property, was graded level.

With regard to your question on water quality, we have monitored effluent from our holding-pond discharge to the Willamette River since 1975. The initial permit, NPDES #1964-J, was in effect until February 11, 1981. At that time, it was superseded by the less stringent NPDES General Permit #0100-J. This second permit expires on December 31, 1985.

Please call if you have any questions or need additional information.

Sincerely,

W. L. Gibbs

W. L. Gibbs, Manager
Engineering Department

WLG:lb
Encl.

cc: J. Van Bladeren
E. L. Bolin
D. L. Foley
R. W. Gullberg

wlgdeql

file W2

NORTHWEST NATURAL GAS COMPANY

220 N.W. SECOND AVENUE PORTLAND, OREGON 97209

(503) 226-4211

Dept. of Environmental Quality
RECEIVED
AUG 6 1984
NORTHWEST REGION

August 2, 1984

Mr. Charles H. Gray
Asst. Regional Manager, NW Region
Department of Environmental Quality
522 S.W. 5th AVe.
Portland, OR 97201

Dear Mr. Gray:

I am writing in response to your recent inquiry concerning operations at the former Portland Gas & Coke Company plant near Linnton, and activities following the plant's shutdown in the late 1950's. A flow diagram of the process is enclosed.

Two accumulations of process residue remained when PG&C stopped manufacturing gas. A spent oxide pile with a volume of approximately 41,000 cubic yards was near the north end of the property: a tar pond estimated to contain some 30,000 cubic yards was located farther south (upstream).

We have some qualitative data on file for these materials, but little quantitative information on specific chemical compounds.

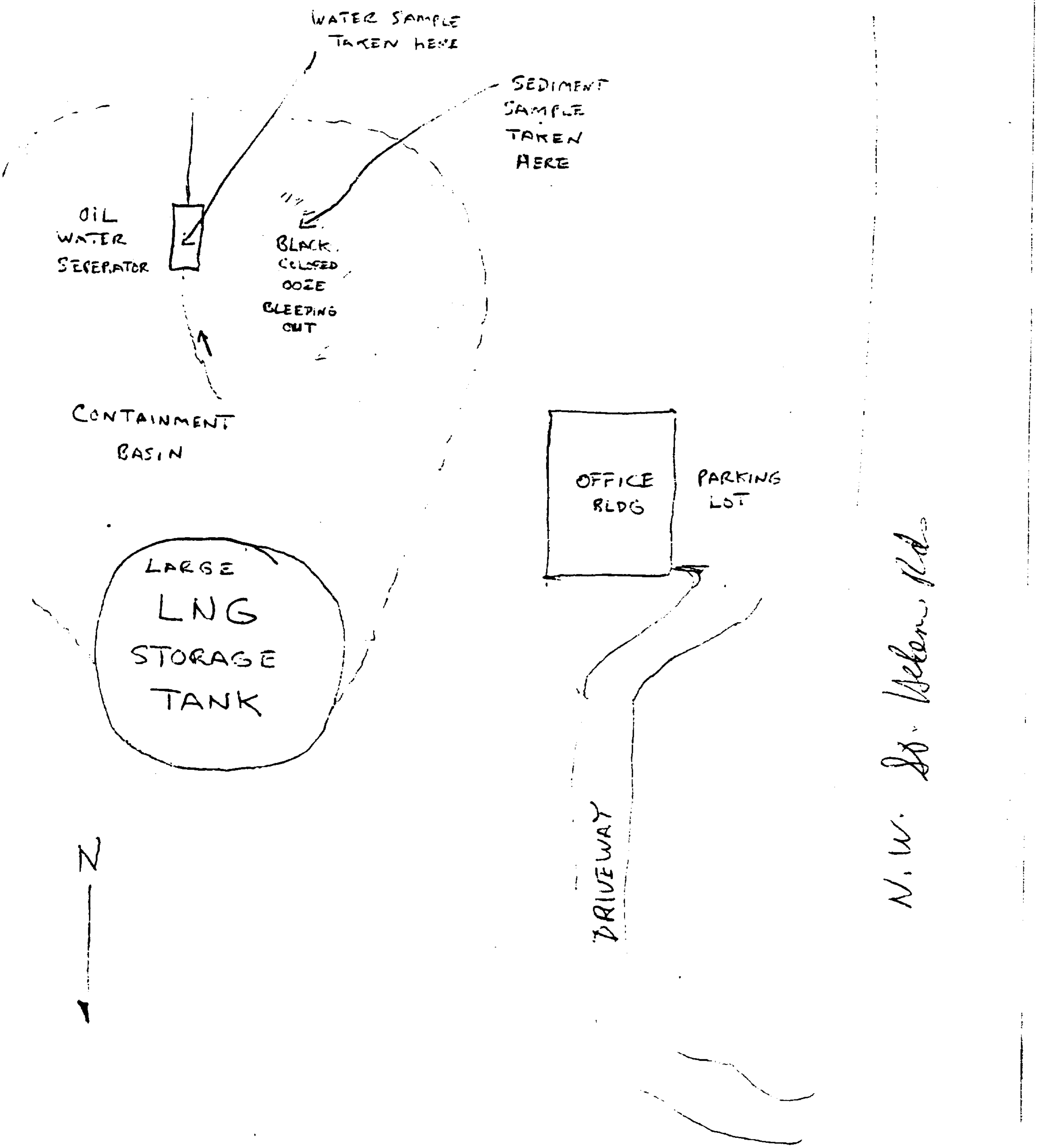
Most of the PG&C facilities were razed in the late 1960's, when construction of a liquefied natural gas (LNG) plant was begun. One portion of the existing small-tank farm was leased to Koppers: those tanks are still in use. Other, larger tanks near the riverbank were eventually reconditioned and are now leased to Pacific Northern Oil. Other tanks and metal structures were sold for scrap. Lampblack from Dorr thickeners was trucked offsite during demolition of the old gas plant. Its final disposition is not known.

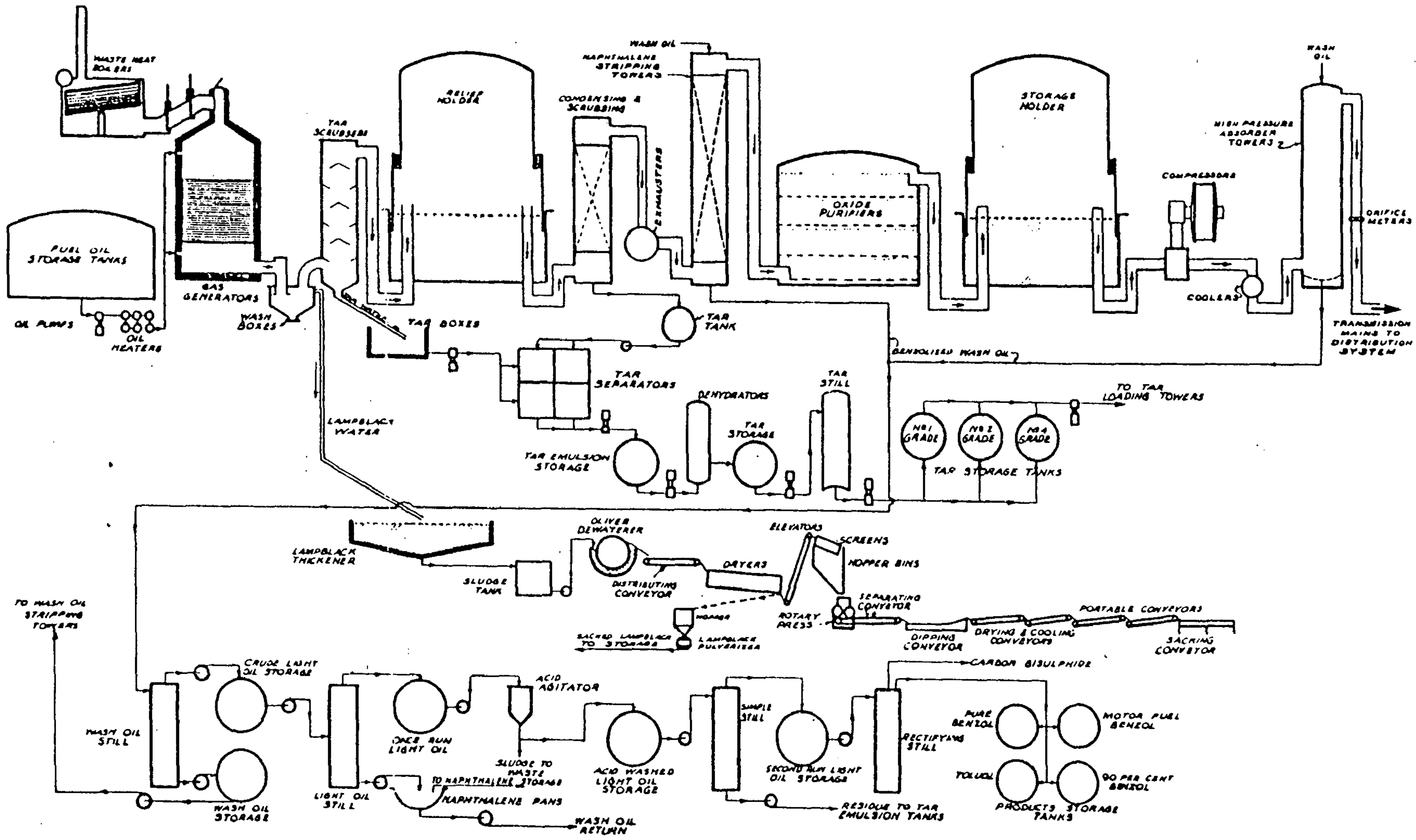
In the early 1970's, all the remaining structures except the old Administration Building were demolished, and underground piping removed, in preparation for building a substitute natural gas (SNG) plant. That plant was never constructed, and the designated area is now used to store crushed rock.

As part of the general site cleanup associated with SNG preparations, the spent oxide pile was mainly hauled to the Scappoose landfill. The balance of

wlgdeq

NW NATURAL GAS CO SAMPLING LOCATIONS





PORTLAND GAS & COKE COMPANY

GAS NUFACTURING & BY PRODUCTS F DIAGRAM

Koppers021800

DEPARTMENT OF ENVIRONMENTAL QUALITY
Request for Analysis

Laboratory No. 84-0734

Location/Site: Koppers/N.W. Natural Gas Date: 9-7-84

Date Received Lab: SEP 07 1984

Collected By: GAP CHG Program: UIC 3249

Date Reported: OCT 31 1984

Purpose:

Report Data To:

Comments:

* Basic (P) unpreserved; Nutrient (R) add H_2SO_4 in field; Metals (Tm) HNO_3 added in lab--don't rinse; Organic(X) lab prepared mason jar

Item No.	Sampling Point Description (include time)	*Sample Container (bottle) #'s: ~~Nutrients~~ Purge / Basic	Hg ~~DO~~ / BOD	Metals / Organic	Phenol / Organic	Test Required
1	Soil Sample 18" below Surface Koppers Storm Runoff Basin *	Z845				Priority Pollutants
				Z847		
2	Pump Sump N.W. Natural Gas	B478	TM1002	TM1000	X571	"
			P381	X599	X608	
3	Sediment N.W. Natural Gas Containment Basin	S140				"
		X610				
4						
5						
6						

Dept. of Environmental Quality
RECEIVED

Laboratory comments *sample split - 1/2 placed in Z847 for organics 9-7-84

Parameters: As, Be, Se, Ag, Sb, Hg, Cd, Cr, Cu, Pb, Ni, Zn, %M, CN⁻, Phenolics, GC/MS purge, Acid, BN, PCB

Koppers021801

DEPARTMENT OF ENVIRONMENTAL QUALITY
Laboratory Data Sheet

Laboratory No: 84-0134
Program Code: 3249
Page: 2 of: 12
Analysis Completed: [illegible] 1984

Koppers/NW Natural Gas

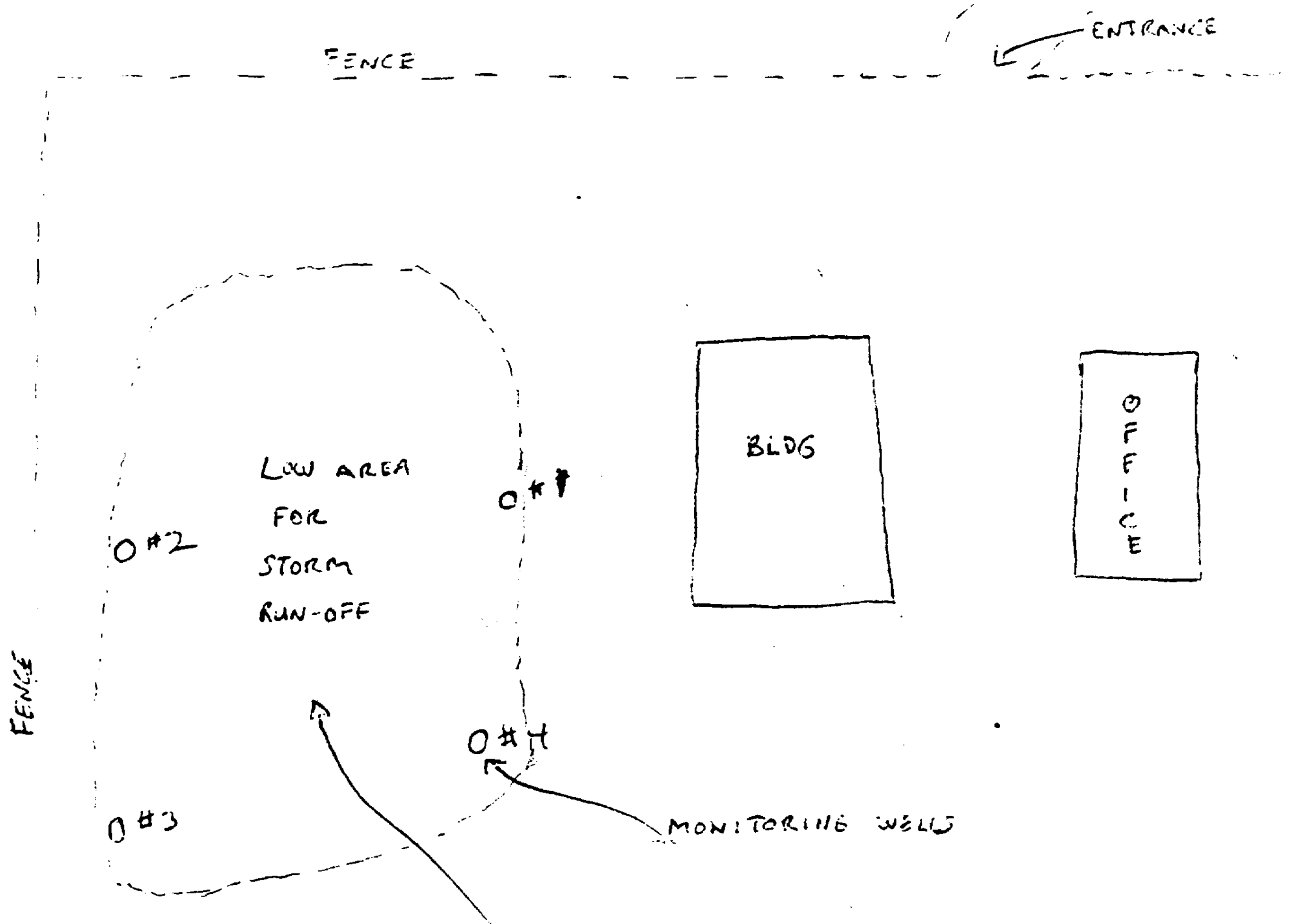
Test Results (All units in mg/l or ug/m^3)

Item No.	Soil/ Sed	CN^-	Phenolics	CN^-	Phenolics
1	Z847		[redacted]	[redacted]/kg	8 mg/Kg
2		P381	X571	0.09 mg/L	2.4 mg/L
3	X610			5 mg/Kg	2 mg/Kg

Comments:

Koppers021802

KOPPERS CO. SAMPLING LOCATIONS



ALSO SOIL IS BLACK COLORED FROM PAST PRACTICES - ONE SOIL SAMPLE TAKEN HERE ON 9-7-84

4|2

DATE: 24 SEP 84

LAB #: 84-077? R2K
ITEM #: 1
SAMPLE: Z547

PCB'S
METHOD 608

AMOUNT MG/KG	PARAMETER
<.05	PCB GROUP 1
<.05	PCB GROUP 2
<.05	PCB GROUP 3
0	TOTAL PCB

PCB GROUP 1 INCLUDES PCB'S 1221, 1232,
1242 AND IS CALCULATED AS 1242.
PCB GROUP 2 INCLUDES PCB'S 1248, 1254
AND IS CALCULATED AS 1254.
PCB GROUP 3 INCLUDES PCB'S 1260, 1262
AND IS CALCULATED AS 1260.

DEPARTMENT OF ENVIRONMENTAL QUALITY
Laboratory Data Sheet

Laboratory No: 84-0734
Program Code: 3249

Analysis Completed: OCT 2 1984

Koppers/NW Natural Gas Gray

Test Results (All units in mg/l or ~~mg/kg~~) mg/kg dry as indicated

Item No.	Soil/Sed	Hg metals	Hg	As	Be	Se	Ag	Sb	
1	Z845		0.23 mg/kg dry	4.2 mg/kg DRY	0.2 mg/kg	<0.25 mg/kg	<0.1 mg/kg	<0.5 mg/kg	
2		TM 1002 TM 1000	<0.0005	0.005	<0.002	<0.005	<0.001	<0.01	
3	S140		0.06 mg/kg dry	4.6 mg/kg DRY	0.3 mg/kg	<0.25 mg/kg	<0.1 mg/kg	<0.5 mg/kg	
	Soil/Sed	metals	Cd	Cr	Cu	Pb	Ni	Zn	%M
1	Z845		<0.44 mg/dry kg	19 mg/kg	17 mg/KG	[illegible] mg/dry kg	21 mg/dry kg	59 mg/KG dry	11.9
2		TM1000	<0.01	<0.1	<0.05	<0.1	0.06	0.10	
3	S140		<0.32 mg/dry kg	12.4 mg/kg	<0.05 mg/KG	16 mg/dry kg	26 mg/dry kg	62 mg/KG dry	24.3

Comments:

Koppers021805

5/2

25 SEP 84

GC/MS SCAN ID

DJH

84-Ø734 Z847

IN ADDITION TO THE PRIORITY POLLUTANT CHEMICALS, THE FOLLOWING COMPOUNDS WERE OBSERVED AT THE ESTIMATED CONCENTRATIONS SHOWN.

COMPOUND	MG/KG
1-METHYLNAPHTHALENE	18Ø
1,3-BENZENEDICARBØNITRILE	2Ø
1,4-DIHYDRO-1,4-METHANONAPHTHALENE	12Ø
1,1'-BIPHENYL	6Ø
2-ETHYLNAPHTHALENE	2Ø
1,7-DIMETHYLNAPHTHALENE	6Ø
1,4-DIMETHYLNAPHTHALENE	35
2,7-DIMETHYLOCTANE	1Ø
DIBENZOFURAN	23Ø
1,3,6-TRIMETHYLNAPHTHALENE	2Ø
2-METHYL-1,1'-BIPHENYL	3Ø
(1,1'-BIPHENYL)-4-CARBOXALDEHYDE	7Ø
9,10-DIHYDROPHENANTHRENE	2Ø
DIBENZOTHIOPHENE	4Ø
9H-CARBAZOLE	3ØØ
4-METHYLDIBENZOTHIOPHENE	3Ø
4-METHYLPHENANTHRENE	7Ø
2-METHYLPHENANTHRENE	13Ø
2,5-DIMETHYLPHENANTHRENE	3Ø
2,3-DIMETHYLPHENANTHRENE	3Ø

3/2

DATE: 26 OCT 84 DJH

LAB #: 84-0774
ITEM #: 1
SAMPLE: 1347

ACID EXTRACTABLES
METHOD 625

AMOUNT MG/KG	PARAMETER	AMOUNT MG/KG	PARAMETER
<1	PHENOL	<1	2,4,6-TRICHLOROPHENOL
<1	2-CHLOROPHENOL	<1	2,4-DINITROPHENOL
<1	2-NITROPHENOL	<1	4-NITROPHENOL
<1	2,4-DIMETHYLPHENOL	<1	2-METHYL-4,6-DINITROPHENOL
<1	2,4-DICHLOROPHENOL	<1	PENTACHLOROPHENOL
<1	4-CHLORO-3-METHYLPHENOL	<1	TETRACHLOROPHENOL **

** REPORTED AS
2,3,4,6-TETRACHLOROPHENOL

BASE/NEUTRAL EXTRACTABLES
METHOD 625

AMOUNT MG/KG	PARAMETER	AMOUNT MG/KG	PARAMETER
<10	BIS(2-CHLOROETHYL) ETHER	150	ACENAPHTHENE
<10	1,3-DICHLOROBENZENE	<10	2,4-DINITROTOLUENE
<10	1,4-DICHLOROBENZENE	380	FLUORENE
<10	1,2-DICHLOROBENZENE	<10	DIETHYLPHTHALATE
<10	HEXACHLOROETHANE	<10	N-NITROSODIPHENYLAMINE
<10	N-NITROSO-DI-N-PROPYLAMINE	<10	4-BROMOPHENYL PHENYL ETHER
<10	NITROBENZENE	<10	HEXACHLOROBENZENE
<10	ISOPHORONE	840	PHENANTHRENE
<10	BIS(2-CHLOROETHOXY) METHANE	1350	ANTHRACENE
<10	1,2,4-TRICHLOROBENZENE	<10	DIBUTYL PHTHALATE
140	NAPHTHALENE	140	FLUORANTHENE
<10	HEXACHLOROBUTADIENE	120	PYRENE
<10	HEXACHLOROCYCLOPENTADIENE	<10	BUTYL BENZYL PHTHALATE
<10	2-CHLORONAPHTHALENE	30	BENZ(A)ANTHRACENE
<10	ACENAPHTHYLENE	30	CHRYSENE
<10	DIMETHYLPHTHALATE	<10	3,3'-DICHLROBENZIDINE
<10	2,6-DINITROTOLUENE	<10	BIS(2-ETHYLHEXYL) PHTHALATE
		<10	BENZ(A)PYRENE

DATE: 24 SEP 84 R2K 8/12

LAB #: 84-077-
ITEM #: 2
SAMPLE: 7603

PCB'S
METHOD 608

AMOUNT MG/L	PARAMETER
<.001	PCB GROUP 1
<.001	PCB GROUP 2
<.001	PCB GROUP 3
0	TOTAL PCB

PCB GROUP 1 INCLUDES PCB'S 1221, 1232,
1242 AND IS CALCULATED AS 1242.
PCB GROUP 2 INCLUDES PCB'S 1248, 1254
AND IS CALCULATED AS 1254.
PCB GROUP 3 INCLUDES PCB'S 1260, 1262
AND IS CALCULATED AS 1260.

DATE: 26 OCT 84

LAB #: 84-0704
ITEM #: 3
SAMPLE: X610

10/12

ACID EXTRACTABLES
METHOD 625

AMOUNT MG/KG	PARAMETER	AMOUNT MG/KG	PARAMETER
<10	PHENOL	<10	2,4,6-TRICHLOROPHENOL
<10	2-CHLOROPHENOL	<10	2,4-DINITROPHENOL
<10	2-NITROPHENOL	<10	4-NITROPHENOL
<10	2,4-DIMETHYLPHENOL	<10	2-METHYL-4,6-DINITROPHENOL
<10	2,4-DICHLOROPHENOL	<10	PENTACHLOROPHENOL
<10	4-CHLORO-3-METHYLPHENOL	<10	TETRACHLOROPHENOL **

** REPORTED AS
2,3,4,6-TETRACHLOROPHENOL

BASE/NEUTRAL EXTRACTABLES
METHOD 625

AMOUNT MG/KG	PARAMETER	AMOUNT MG/KG	PARAMETER
<10	BIS(2-CHLOROETHYL) ETHER	15	ACENAPHTHENE
<10	1,3-DICHLOROBENZENE	<10	2,4-DINITROTOLUENE
<10	1,4-DICHLOROBENZENE	15	FLUORENE
<10	1,2-DICHLOROBENZENE	<10	DIETHYLPHTHALATE
<10	HEXACHLOROETHANE	<10	N-NITROSODIPHENYLAMINE
<10	N-NITROSO-DI-N-PROPYLAMINE	<10	4-BROMOPHENYL PHENYL ETHER
<10	NITROBENZENE	<10	HEXACHLOROBENZENE
<10	ISOPHORONE	60	PHENANTHRENE
<10	BIS(2-CHLOROETHOXY) METHANE	<10	ANTHRACENE
<10	1,2,4-TRICHLOROBENZENE	<10	DIBUTYL PHTHALATE
520	NAPHTHALENE	30	FLUORANTHENE
<10	HEXACHLOROBUTADIENE	35	PYRENE
<10	HEXACHLOROCYCLOPENTADIENE	<10	BUTYL BENZYL PHTHALATE
<10	2-CHLORONAPHTHALENE	<10	BENZ(A)ANTHRACENE
15	ACENAPHTHYLENE	10	CHRYSENE
<10	DIMETHYLPHTHALATE	<10	3,3'-DICHLOROBENZIDINE
<10	2,6-DINITROTOLUENE	<10	BIS(2-ETHYLHEXYL) PHTHALATE
		<10	BENZ(A)PYRENE

12/12

25 SEP 84

GC/MS SCAN ID

DJH

84-Ø734 X61Ø

IN ADDITION TO THE PRIORITY POLLUTANT CHEMICALS, THE FOLLOWING COMPOUNDS WERE OBSERVED AT THE *ESTIMATED* CONCENTRATIONS SHOWN.

COMPOUND	MG/KG
1-ETHYNYL-4-METHYL-BENZENE	[illegible]
BENZO(B)THIOPHENE	[illegible]
2-METHYLNAPHTHALENE	[illegible]
1,1'-BIPHENYL	[illegible]

4 3/37

27 DEC 84

GC/MS SCAN ID DJH

84-1034 X565

THE WATER SAMPLE WAS EXTRACTED BY EPA RCRA PROCEDURE 3540 (ACETONE/HEXANE) AND ANALYZED BY GC/MS. IN ADDITION TO THE PRIORITY POLLUTANT CHEMICALS, THE SAMPLE WAS SCANNED FOR ANY OTHER UNKNOWNS ABOVE THE DETECTION LIMIT OF 1.0 MG/L. THE FOLLOWING COMPOUNDS WERE TENTATIVELY IDENTIFIED WITH THE ESTIMATED CONCENTRATIONS SHOWN.

COMPOUND	MG/KG
4-HYDROXY-4-METHYL-2-PENTANONE	80
ETHYLBENZENE	10
1,2-DIMETHYLBENZENE	54
1,2,4-TRIMETHYLBENZENE	54
1-ETHENYL-2-METHYLBENZENE	36
1-PROPENYLBENZENE	165
2,3-DIHYDRO-4-METHYL-1H-INDENE	52
BENZO(B)THIOPHENE	200
2-METHYLNAPHTHALENE	960
1,1'-BIPHENYL	110
1,8-DIMETHYLBENZENE	150

Koppers021811

5 3/ 7

DATE: 26 DEC 84 DJH

LAB #: 84-1034
ITEM #: 2
SAMPLE: X383

ACID EXTRACTABLES
METHOD 625

AMOUNT MG/L	PARAMETER	AMOUNT MG/L	PARAMETER
.010	PHENOL	<.001	2,4,6-TRICHLOROPHENOL
<.001	2-CHLOROPHENOL	<.001	2,4-DINITROPHENOL
<.001	2-NITROPHENOL	<.001	4-NITROPHENOL
<.001	.010DIMETHYLPHENOL	<.001	2-METHYL-4,6-DINITROPHENOL
<.001	2,4-DICHLOROPHENOL	<.001	PENTACHLOROPHENOL
<.001	4-CHLORO-3-METHYLPHENOL	<.001	TETRACHLOROPHENOL **

** REPORTED AS
2,3,4,6-TETRACHLOROPHENOL

BASE/NEUTRAL EXTRACTABLES
METHOD 625

AMOUNT MG/L	PARAMETER	AMOUNT MG/L	PARAMETER
<.001	BIS(2-CHLOROETHYL) ETHER	.020	ACENAPHTHENE
<.001	1,3-DICHLOROBENZENE	<.001	2,4-DINITROTOLUENE
<.001	1,4-DICHLOROBENZENE	.018	FLUORENE
<.001	1,2-DICHLOROBENZENE	<.001	DIETHYLPHTHALATE
<.001	HEXACHLOROETHANE	<.001	N-NITROSODIPHENYLAMINE
<.001	N-NITROSO-DI-N-PROPYLAMINE	<.001	4-BROMOPHENYL PHENYL ETHER
<.001	NITROBENZENE	<.001	HEXACHLOROBENZENE
<.001	ISOPHORONE	.051	PHENANTHRENE
<.001	BIS(2-CHLOROETHOXY) METHANE	.006	ANTHRACENE
<.001	1,2,4-TRICHLOROBENZENE	<.001	DIBUTYL PHTHALATE
<.001	NAPHTHALENE	.007	FLUORANTHENE
<.001	HEXACHLOROBUTADIENE	.007	PYRENE
<.001	HEXACHLOROCYCLOPENTADIENE	<.001	BUTYL BENZYL PHTHALATE
<.001	2-CHLORONAPHTHALENE	.001	BENZ(A)ANTHRACENE
.023	ACENAPHTHYLENE	.001	CHRYSENE
<.001	DIMETHYLPHTHALATE	<.001	3,3'-DICHLROBENZIDINE
<.001	2,6-DINITROTOLUENE	<.001	BIS(2-ETHYLHEXYL) PHTHALATE
		<.001	BENZ(A)PYRENE

7/7

26 DEC 84

GC/MS SCAN ID

DJH

84-1Ø34 X383

THE WATER SAMPLE WAS EXTRACTED IN METHYLENE CHLORIDE AND ANALYZED BY GC/MS. IN ADDITION TO THE PRIORITY POLLUTANT CHEMICALS, THE SAMPLE WAS SCANNED FOR ANY OTHER UNKNOWNS. THE FOLLOWING COMPOUNDS WERE TENTATIVELY IDENTIFIED WITH THE ESTIMATED CONCENTRATIONS SHOWN.

COMPOUND	MG/L
METHYLBENZENE	Ø.Ø2
1,2-DIMETHYLBENZENE	Ø.11
ETHYLBENZENE	Ø.Ø6
1-ETHYL-2-METHYLBENZENE	Ø.Ø2
1-PROPYNYLBENZENE	Ø.29
1-PHENYLETHANONE	Ø.Ø2
BENZO(B)THIOPHENE	Ø.17
2,3-DIHYDRO-1H-INDEN-1-ONE	Ø.Ø2
2-METHYLNAPHTHALENE	Ø.14

Laboratory No: 84-1034

DEPARTMENT OF ENVIRONMENTAL QUALITY
Laboratory Data Sheet

Program Code: 4292

Page: 1 of: 1

Analysis Completed:

NW Natural Gas Gray

Item No. Test Results (All units in mg/l or ~~ug/m~~ as indicated)

Item No.	metals	Pb	% M								
1	X565	23*	42.%								
2	TM1132	<0.1									

Comments: * mg/kg DRY

Koppers021814

DEPARTMENT OF ENVIRONMENTAL QUALITY
Request for Analysis

Laboratory No. 84-1033

Location/Site: Koppers
Date: 12-19-84
Date Received Lab: DEC 19 1984

Collected By: Pettit, Davison, Gray
Program: HW 4292
Date Reported: JAN 04 1985

Purpose:
Report Data To: Davison, Gray

Comments:

* Basic (P) unpreserved; Nutrient (R) add H_2SO_4 in field; Metals (Tm) HNO_3 added in lab--don't rinse; Organic(X) lab prepared mason jar

Item No.	Sampling Point Description (include time)	*Sample Container (bottle) #'s: Nutrients / Basic	DO / BOD	Metals / Organic		Test Required	
1	Well No. 1 (0955 hrs)		① ②	TM 1139 X476		~~Priority Pollutants~~ Acid/BN	Pb
2	Well No 2 (1000 hrs)			TM 1138 X 202		"	"
3	Well No. 3 (1005 hrs)			TM 1136 X 647		"	"
4	Well No. 4 (1010 hrs)			TM 1137 X 666		"	"
5							
6							

Dept of Environmental Quality
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JAN 8 1985
NORTHWEST REGION

Laboratory comments ① contains ~50 mls ② ~200 mls

Koppers021815

3/13

DATE: 27 DEC 94 DH

LAB #: 84-1033
ITEM #: 1
SAMPLE: X476

PESTICIDES
METHOD 625

AMOUNT MG/KG	PARAMETER
<5	ALPHA-BHC
<5	HEPTACHLOR
<5	ALDRIN
<5	HEPTACHLOR EPOXIDE
<5	ENDOSULFAN I
<5	TRANS-NONACHLOR
<5	P,P'-DDE
<5	DIELDRIN
<5	ENDRIN
<5	ENDOSULFAN II
<5	P,P'-DDD
<5	ENDOSULFAN CYCLIC SULFATE
<5	P,P'-DDT
<5	GAMMA-BHC (LINDANE)

3/13

27 DEC 84

GC/MS SCAN ID DJH

84-1033 X476

THE WATER SAMPLE WAS EXTRACTED IN METHYLENE CHLORIDE AND ANALYZED BY GC/MS. IN ADDITION TO THE PRIORITY POLLUTANT CHEMICALS, THE SAMPLE WAS SCANNED FOR ANY OTHER UNKNOWNS ABOVE THE DETECTION LIMIT OF 10 MG/L. THE FOLLOWING COMPOUNDS WERE TENTATIVELY IDENTIFIED WITH THE ESTIMATED CONCENTRATIONS SHOWN.

COMPOUND	MG/L
ETHYLBENZENE	[redacted]
1,2-DIMETHYLBENZENE	[redacted]

5\1.3

DATE: 27 DEC 84 DJM

LAB #: 84-1033
ITEM #: 2
SAMPLE: X202

PESTICIDES
METHOD 625

AMOUNT MG/L	PARAMETER
<5	ALPHA-BHC
<5	HEPTACHLOR
<5	ALDRIN
<5	HEPTACHLOR EPOXIDE
<5	ENDOSULFAN I
<5	TRANS-NONACHLOR
<5	P,P'-DDE
<5	DIELDRIN
<5	ENDRIN
<5	ENDOSULFAN II
<5	P,P'-DDD
<5	ENDOSULFAN CYCLIC SULFATE
<5	P,P'-DDT
<5	GAMMA-BHC (LINDANE)

DATE: 28 DEC 84

LAB #: 84-1033 DJH
ITEM #: 3
SAMPLE: X647

PESTICIDES
METHOD 625

AMOUNT MG/L	PARAMETER
<5	ALPHA-BHC
<5	HEPTACHLOR
<5	ALDRIN
<5	HEPTACHLOR EPOXIDE
<5	ENDOSULFAN I
<5	TRANS-NONACHLOR
<5	P,P'-DDE
<5	DIELDRIN
<5	ENDRIN
<5	ENDOSULFAN II
<5	P,P'-DDD
<5	ENDOSULFAN CYCLIC SULFATE
<5	P,P'-DDT
<5	GAMMA-BHC (LINDANE)

DATE: 27 DEC 84

LAB #: 84-1033
ITEM #: 4
SAMPLE: X666

28 DEC 84

GC/MS SCAN ID

84-1033 X647

THE WATER SAMPLE WAS EXTRACTED IN METHYLENE CHLORIDE AND ANALYZED BY GC/MS. IN ADDITION TO THE PRIORITY POLLUTANT CHEMICALS, THE SAMPLE WAS SCANNED FOR ANY OTHER UNKNOWNS ABOVE THE DETECTION LIMIT OF 1.Ø MG/L. THE FOLLOWING COMPOUNDS WERE TENTATIVELY IDENTIFIED WITH THE ESTIMATED CONCENTRATIONS SHOWN.

COMPOUND	MG/L
ETHYLBENZENE	4
[redacted]	[redacted]
2-METHYLNAPHTHALENE	8
DIBENZOFURAN	5
9H-CARBAZOLE	20
4-METHYLPHENANTHRENE	2
3-METHYLPHENANTHRENE	5

ACID EXTRACTABLES
METHOD 625

AMOUNT MG/L	PARAMETER	AMOUNT MG/L	PARAMETER
<Ø.1	PHENOL	<Ø.1	2,4,6-TRICHLOROPHENOL
<Ø.1	2-CHLOROPHENOL	<Ø.1	2,4-DINITROPHENOL
<Ø.1	2-NITROPHENOL	<Ø.1	4-NITROPHENOL
<Ø.1	2,4-DIMETHYLPHENOL	<Ø.1	2-METHYL-4,6-DINITROPHENOL
<Ø.1	2,4-DICHLOROPHENOL	<Ø.1	PENTACHLOROPHENOL
[redacted]	[redacted]	<Ø.1	TETRACHLOROPHENOL **

** REPORTED AS 2,3,4,6-TETRACHLOROPHENOL

BASE/NEUTRAL EXTRACTABLES
METHOD 625

AMOUNT MG/L	PARAMETER	AMOUNT MG/L	PARAMETER
<Ø.1	BIS(2-CHLOROETHYL) ETHER	1.2	ACENAPHTHENE
<Ø.1	1,3-DICHLOROBENZENE	<Ø.1	2,4-DINITROTOLUENE
<Ø.1	1,4-DICHLOROBENZENE	1.9	FLUORENE
<Ø.1	1,2-DICHLOROBENZENE	<Ø.1	DIETHYLPHTHALATE
<Ø.1	HEXACHLOROETHANE	<Ø.1	N-NITROSODIPHENYLAMINE
<Ø.1	N-NITROSO-DI-N-PROPYLAMINE	<Ø.1	4-BROMOPHENYL PHENYL ETHER
<Ø.1	NITROBENZENE	<Ø.1	HEXACHLOROBENZENE
<Ø.1	ISOPHORONE	5.5	PHENANTHRENE
<Ø.1	BIS(2-CHLOROETHOXY) METHANE	13.1	ANTHRACENE
<Ø.1	1,2,4-TRICHLOROBENZENE	<Ø.1	DIBUTYL PHTHALATE
4.2	NAPHTHALENE	1.8	FLUORANTHENE
<Ø.1	HEXACHLOROBUTADIENE	<Ø.1	PYRENE
<Ø.1	HEXACHLOROCYCLOPENTADIENE	<Ø.1	BUTYL BENZYL PHTHALATE
<Ø.1	2-CHLORONAPHTHALENE	Ø.3	BENZ(A)ANTHRACENE
<Ø.1	ACENAPHTHYLENE	Ø.5	CHRYSENE
<Ø.1	DIMETHYLPHTHALATE	<Ø.1	3,3'-DICHLOROBENZIDINE
<Ø.1	2,6-DINITROTOLUENE	<Ø.1	BIS(2-ETHYLHEXYL) PHTHALATE
		<Ø.1	BENZ(A)PYRENE

DJH

27 DEC 84

GC/MS SCAN ID

84-1033 X666

THE WATER SAMPLE WAS EXTRACTED IN METHYLENE CHLORIDE AND ANALYZED BY GC/MS. IN ADDITION TO THE PRIORITY POLLUTANT CHEMICALS, THE SAMPLE WAS SCANNED FOR ANY OTHER UNKNOWNS ABOVE THE DETECTION LIMIT OF 0.1 MG/L. THE FOLLOWING COMPOUNDS WERE TENTATIVELY IDENTIFIED WITH THE ESTIMATED CONCENTRATIONS SHOWN.

COMPOUND	MG/L
ETHYLBENZENE	51
1,2-DIMETHYLBENZENE	22
1-ETHENYL-2-METHYLBENZENE	3
2-METHYLNAPHTHALENE	14
1,1'-BIPHENYL	2
1,7-DIMETHYLNAPHTHALENE	2
1,3-DIMETHYLNAPHTHALENE	2
DIBENZOFURAN	8
9H-CARBAZOLE	10
3-METHYLPHENANTHRENE	2

STATE OF OREGON

INTEROFFICE MEMO

TO: Gary Calaba

DATE: August 9, 1984

FROM: CHGray CHG

SUBJECT: HW - Northwest Natural Gas
Preliminary Assessment
Multnomah County

The old Portland Gas & Coke Company produced oil and gas by gasification of oil with steam. The tar bottoms were disposed on-site. This operation started sometime in the 1880's and terminated in 1956 when they converted to importing liquified natural gas.

The tar bottoms are covered with at least 10 feet of soil cover. Exact locations of disposal are unknown. The site is next to the Willamette River. The shallow alluvial aquifer (approximately 10 feet deep) discharges to the Willamette River.

The Wacker Siltronics plant was built on top of part of the fill. During excavation for the plant site, oil sheen were encountered.

The presence of the tar bottoms due to their location and age pose a low threat to the environment. I do not feel any further investigation is warranted.

Please note letter from Northwest Natural Gas regarding their knowledge of the site. Their NPDES permit issued in 1974 has required oil and grease sampling from the stormwater pond. Up until 1981 it was weekly and was changed to monthly. They have consistently operated within those oil and grease effluent limitations.

/emc

Mult.

OR ZERN DOANE'S LAKE INVESTIGATION

NAME	REPRESENTING	
RRY PATTERSON	DEQ - WQ	229-5374
ick Clinton	DEQ-NWR	229-6955
M ELLIS	WACKER SILTRONIC	243-2020
HO PITTMAN	" "	"
l Bolin	NW Nat. Gas.	220-2574
ichard D. Bach	Stoel Rives Boley	294-9213
eil J. Mullane	DEQ-HSW	229-6242
nis Adamczyk	DEQ - NWR	229-5153
Gillespie	DNEQ - NWR	229-5292
Ed Finklea	NW Nat. Gas	220-2428

7/28/86
DEQ office

cc: HW
WQ
EPA-000

STOEL, RIVES, BOLEY, FRASER & WYSE
ATTORNEYS AT LAW

900 S W FIFTH AVENUE, SUITE 2300
PORTLAND, OREGON 97204-1268

TELEPHONE (503) 224-3380
TELECOPIER (503) 220-2480
CABLE LAWPORT
TELEX 703455
(503) 294-9213
WRITER'S DIRECT DIAL NUMBER

Dept. of Environmental Quality
RECEIVED
JUL 1 1986
NORTHWEST REGION

July 14, 1986

Mr. Fred Hansen, Director
Department of Environmental Quality
522 SW Fifth Avenue
Portland, OR 97204

Dear Fred: Remedial action

Re: Wacker Siltronic/Northwest Natural Gas Company/Koppers Company

This will confirm my recent discussions with Janet Gillaspie to the effect that representatives of Northwest Natural Gas Company, Wacker Siltronic and Koppers Company have met to discuss a joint study of suspected contamination in the vicinity of the Wacker Siltronic plant.

At such time as the companies have agreed to an appropriate division of the work and related expenses, and have retained a consultant to prepare a study plan, we will let you know. At that time, we contemplate reviewing the proposed study plan with Ms. Gillaspie's staff.

We continue to appreciate the assistance and cooperation that you and your staff have provided in connection with this matter.

Very truly yours,

Richard D. Bach

RDB:twa
cc: Ms. Janet Gillaspie
Bruce DeBolt, Esq.
Mr. Ed Bolin
Mr. Harry Schmid
Mr. James R. Ellis
Mr. John A. Oxford

STATE OF OREGON

Environmental Quality
Laboratories & Applied Research

INTEROFFICE MEMO

LJ#4

DOANE'S

TO: Andrew L. Schaedel

DATE: July 1, 1986

FROM: Michael R. Wiltsey MRW

SUBJECT: Investigation of Flow From Storm Drain Near SP&S Railroad Bridge

On June 26, 1986, Jim Parr and I were collecting a routine sample from the SP&S Railroad bridge and noted a flow of rust colored water from a storm drain located approximately 40 yards downstream from the bridge on the west bank of the Willamette River. Subsequently, we collected a sample of the flow as it left the culvert.

Northwest Region was notified on June 27, 1986 and I met Ed Woods at the site at 12:30pm. The flow was approximately half of the previous day's. Eight photos of the site, which are on file at the Lab, were taken by myself and Ed took some as well. Additional samples were taken to ensure complete analysis. Copies of the request for analysis for both days are enclosed.

February 10, 1983, Greg Pettit collected a sample from the same storm drain noting similar runoff. Lead analysis was performed at that time of which a copy of the data is also enclosed.

MRW:ah

cc: Larry Patterson
Janet Gillaspie
Ed Woods

Dept. of Environmental Quality
RECEIVED
JUL 3 1986
NORTHWEST REGION

DEPARTMENT OF ENVIRONMENTAL QUALITY
Request for Analysis

Laboratory No. 86-0556

Location/Site: WILLAMETTE RIVER 40 yds downstream of SP&S R.R. bridge
Date: 26 June 1986
Date Received Lab: JUN 26 1986

Collected By: MRW
Program: 3256 A I
Date Reported:

Purpose: Investigate release
Report Data To: Mike Wiltsey

Comments:

* Basic (P) unpreserved; Nutrient (R) add H_2SO_4 in field; Metals (Tm) HNO_3 added in lab--don't rinse; Organic(X) lab,prepared mason jar

Item No.	Sampling Point Description (include time)	*Sample Container (bottle) #'s Nutrients / Basic	DO / BOD	Metals / Organic		Test Required
1	1515 hrs. Culvert on West bank of Willamette R. ~ 40 yds downstream of SP&S R.R. bridge	P855				Color, Turbidity, SS, pH, Alkalinity, Diss & total Fe, TOC
2						
3						
4						
5						
6						

Laboratory comments INSUFFICIENT SAMPLE ..... SUPPLEMENTED WITH SAMPLES OBTAINED ON FOLLOWING DAY (SEE PAGE 2).

Koppers021826

2/2

DEPARTMENT OF ENVIRONMENTAL QUALITY
Request for Analysis

Laboratory No. 86-0556

Location/Site: WILLAMETTE RIVER 40YDS DOWNSTREAM OF SP&S R.R. BRIDGE

Date: 27 JUNE 1986

Date Received Lab: JUN 27 1986

Collected By: MRW

Program: 3256AI

Date Reported:

Purpose: INVESTIGATE RELEASE

Report Data To:

Comments:

lab prepared

* Basic (P) unpreserved; Nutrient (R) add H_2SO_4 in field; Metals (Tm) HNO_3 added in lab--don't rinse; Organic(X) mason jar

Item No.	Sampling Point Description (include time)	*Sample Container (bottle) #'s: Nutrients / Basic	DO / BOD	Metals / Organic		Test Required
1	1200HRS. CULVERT ON WEST BANK OF RIVER. 40YDS DOWNSTREAM OF SP&S RAILROAD BRIDGE	R738 P231		TM2046 (NOT FILTERED) TM2045 * X748 X811 (DUPLICATES)		Pb, Cu, Cr, As (TOTAL AND DISSOLVED), CHLOROPHENOLICS, PENTACHLOROPHENOL, CREOSOTE, COALTAR RESIDUES, GC/MS ACID, BASE, NEUTRAL EXTRACTABLES
2						COLOR, TURBIDITY, SS, pH, ALKALINITY, DISSOLVED & TOTAL Fe, TOC GC/MS HERBICIDES
3						
4						
6						

Laboratory comments * FILTERED FROM TM2046 IN LAB 87

Koppers021827

DEPARTMENT OF ENVIRONMENTAL QUALITY
Request for Analysis

Laboratory No. 83-0081

Location/Site: Doanne Lake Area Date: 2-10-83 Date Received Lab: FEB 10 [illegible]

Collected By: GAP Program: H.E 3150B Date Reported: 2-22-83

Purpose: Evaluation of Storm Drainage Report Data To:

Comments: Heavy Precipitation last several Days
Heavy Flow From Both Culverts / Send Results to GAP

Item No.	Description	Sample Containers * Basic Nutrients	DO BOD	Metals Organic		Test Required
1	Effluent From Culvert Draining to Willamette Just North SP&S RR Br.			TM291 ~~2~~		Lead Field readings } Temp. 7.5 pH - 7.1 Alk - 21 Cond - 14[illegible] DO - 11.8
2	Effluent From Culvert Draining to Willamette Just South SP&S RR Br.			TM292		Lead Field readings } Temp - 8.5 Alk - 82 pH - 7.1 Cond - 763 DO 8.6

* Basic - Unpreserved sample; Nutrient - Preserve with H_2SO_4

Metals - HNO_3 added in Laboratory do not rinse; Organic - Laboratory prepared Mason Jar

Koppers021828

Copy to L. Patterson - WQ
G. Pett. t - Lab

3150B

DEPARTMENT OF ENVIRONMENTAL QUALITY
Laboratory Data Sheet

Laboratory No. 83-0081
Page: 1 of: 1

Doane Lake GAP

Analysis Completed: 2-22-83

Test Results (All units in mg/l or ug/m³)

Item No.	Bottle No.		Pb									
1	TM 291		<0.1									
2	TM 292		<0.1									

Comments:

Koppers021829

Doane's

VICTOR ATIYEH
Governor

Department of Environmental Quality

522 S.W. FIFTH AVENUE, BOX 1760, PORTLAND, OREGON 97207 PHONE: (503) 229-5696

Jim D'Sorbo
Wacker Siltronics
PO Box 03180
Portland, OR 97203

June 26, 1986

Dear Jim:

I appreciate your taking the time to get together. I've discussed with our staff some of the ideas we talked about.

Given the information we have at this time--information gathered both from you and from our files--we do not feel comfortable giving the entire northern end of Doane's Lake area a "clean bill of health," as you mentioned.

However, our technical staff believes it may be possible to accommodate your current expansion plans while investigating the other issues in the area. You may wish to have John Pittman of your engineering staff contact Neil Mullane of the Hazardous and Solid Waste Division (229-6242), whom I have appointed as lead staff person for this project, to explore this further.

Also, I recently received a letter from an attorney for Northwest Natural Gas indicating that Northwest Natural, Koppers & Wacker have met and will be undertaking a study of the area. We look forward to meeting with you as soon as a consultant has been hired.

Again, I enjoyed our visit and please call me at 229-5300 in the future should you have questions or thoughts about Oregon's environmental programs.

Sincerely,

Mike Downs for

Fred Hansen
Director

FH:s
AS3232

DEQ 1

STATE OF OREGON

INTEROFFICE MEMO

TO: FRED HANSEN LARRY PATTERSON
MIKE DOWNS

DATE: June 18, 1986

FROM: JAGILLASPIE jag THROUGH TMBOLTON

SUBJECT: Past practice Investigation - Northern Doane's Lake

Dick Bach called today from Stoel, Rives, Boely. He is representing Northwest Natural Gas in the past practice investigation in Northern Doane's Lake. The Gas Company is very willing to undertake an investigation of the area.

The Gas Company will be sitting down with Wacker, and hopefully Koppers soon to discuss the project. They will then hire a consultant and request a meeting with us to review the general aspects of the study. The consultant will then prepare a study plan, which the Department will review and comment on.

Dick envisions this being a very similar project to the investigation he assisted Pacific Power & Light in connection with its Astoria Service Center.

At this time, Dick would prefer that we wait until we hear from them on setting a meeting to review the issues. I said we would be getting a technical team together to oversee the project.

Northwest Natural has two areas of concern. One, how extensively were the tar ponds moved around when the now-Wacker property was filled, and two, what other pollutants might be in the area from other facilities such as Rhone-Poulenc or Gould. I explained the current status of both Rhone-Poulenc and Gould.

JAG/dlr

FREE
Since 1975

THE Neighbor

A Monthly Publication
Serving Neighborhoods West/Northwest, Portland, Oregon

Volume 9 Number 9 May 1984

Inside

A Firehouse House
see page 8

West Hills Traffic Study
see page 8

Not Bad Wood
see page 16

Toxic Waste Sites Abound in NW Area

By Gary Stallings

In 1979, the Oregon Department of Environmental Quality and the federal Environmental Protection Agency identified a list of 111 hazardous waste sites throughout the state. They were looking for places which might need Superfund money and possibly enforcement actions.

According to Al Manning of the Portland EPA field office, these sites were selected because they had been mentioned in EPA or DEQ reports, complaints, recommendations or had otherwise received attention. They were names in the files. So they got on the list.

An alarming 13.5% of the sites on this statewide list, that's 15 out of the 111, were, and still are, located in Northwest Portland.

Now after four years of investigation seven of these sites have been classified as having "no immediate health hazard or environmental problem."

What that means in practical terms is that somebody at least *called* all those places on the phone and asked them if they were seriously affecting he environment in any negative way.

Although many of the investigations consisted of nothing more than telephone conversations, it still seems likely that the seven sites on which the investigation has been closed were really the least worrisome of the lot. The purpose of the investigations was to discover the *worst*, and whatever hazards exist at the sites which were neglected hopefully are nothing to compare to the other ecological disasters which were found in the neighborhood.

For instance, about 30 years ago, 60 or 70 barrels of "pesticide slop" were apparently buried at the Shell Oil Bulk Terminal at 5800 NW St. Helen's Rd. At this point, there is no one around who has first-hand information about the event. It's not clear just what was in the "pesticide slop", though DDT is a likely guess. It is also not clear exactly where the stuff was buried. Most interestingly, it is not clear *why* the stuff was buried. Tests are continuing to determine if there is any leakage and what further steps should be taken. We can only hope for a creative solution to the problem.

The remaining seven sites are all part of what the DEQ calls the Doane Lake Study Area, which makes it sound like an academic summer camp, but it's

Continued on page 10

RECEIVED
MAY 15 1984
Dept. of Environmental Quality
NORTHWEST REGION

PAST PRACTICE

Koppers021832

as*ɔ Sites

(pa 1)

itely not a place to send your kids if you ever t them back again. It's been used as an stri dump for longer than anyone can emb .

e plants involved include:

Rhone-Poulenc (formerly Rhodia or Chipman mic 6200 NW St. Helens Rd., manufacturer for lator of pesticides.

Pen..alt Chemical, 6400 NW Front Ave., ufacturer of industrial chemicals, principally rine.

Gou Inc. (formerly NL Industries), 5909 NW t Av secondary refiner of lead and zinc.

Koppers Company, 7540 NW St. Helens Rd., ufacturer of pitch and electrobinding products.

Ind rial Air Products (Division of Liquid Air), 6 1 NW Front Ave., manufacturer of tyle..

Gilmore Steel, 6161 NW 61st Ave., steel ricators, coaters, and engravers.

Nor west Natural Gas, 7900 NW St. Helens , ma facturer of gas and oil from petroleum.

n fairness to these companies, most of them are thought to be responsible for the current oble . In most cases, the problems were erit when the companies were purchased by ir pr ent owners, some of whom have spent ge amounts of money trying to remedy the ation.

ast nprovement"

Wor on Doane Lake has been going on for over o years and there has been "vast improvement" cording to Charles Clinton who is supervising the ojec or DEQ. He points out that there is now e in e water again, algae and animals such as etles and frogs. He would not advise swimming ere, however, and says it is still far from meeting e st water quality standards.

Do Lake itself lies between St. Helen's Road d the Willamette River, just south of the St. Johns ridge, almost directly across the river from the niversity of Portland.

Go , Inc., one of the sites at Doane Lake, is non he three places in Oregon which has ualified for inclusion on the EPA's National riorities List, a catalog of the top 400 environ- enta atastrophes in the nation.

But e entire area seems to be affected. One nvir nental consulting firm's report said, it was essentially impossible to use the monitoring nformation to trace most of the various contami- ants ck to a particular originating point source r so es."

To y, only a small part of the lake remains, but t still acts as a sump in wet weather. Most of the ake area shown on maps from the '40s has been illed with whatever people around there wanted o ge d of.

It became a smorgasbord at the chemical feast. The air, water and soil are all contaminated. A ypic test series shows that the environment is con inated with lead, phenols, and sulfate in excel of the Oregon standards for water, air, and hazardous waste."

Lead concentrations in the air have been measured at 100 times the legal limit. Soil borings routinely turn up, "2,4-D, silvex, 2,4,5-T, lindane, aldrin, IOA, OCP, DCP, TCP, PCP, endrin, lead, mercury, dioxin, and chlorinated phenols."

Not being a chemist, I asked the hazardous waste specialists at DEQ how, for example, I should react to a chlorinated phenol being loose in my environment. They didn't seem to think it was a good idea to have them around. They thought chlorinated phenols should be very carefully contained in order to discourage their natural inclination for random travel and wholesale destruction. I got the image of a molecular version of the hordes of Genghis Khan. No grass will grow after they've been through.

But the people at DEQ also went to some lengths to help me distinguish between simple chlorinated phenols and polychlorinated-biphenols, the dreaded PCB's. They drew elegant molecular diagrams to show me the difference.

That didn't help. I kept asking what it meant to me.

Sharks vs. piranhas

Finally, one of them said, "Well, it's the difference between being eaten by sharks and being eaten by piranhas."

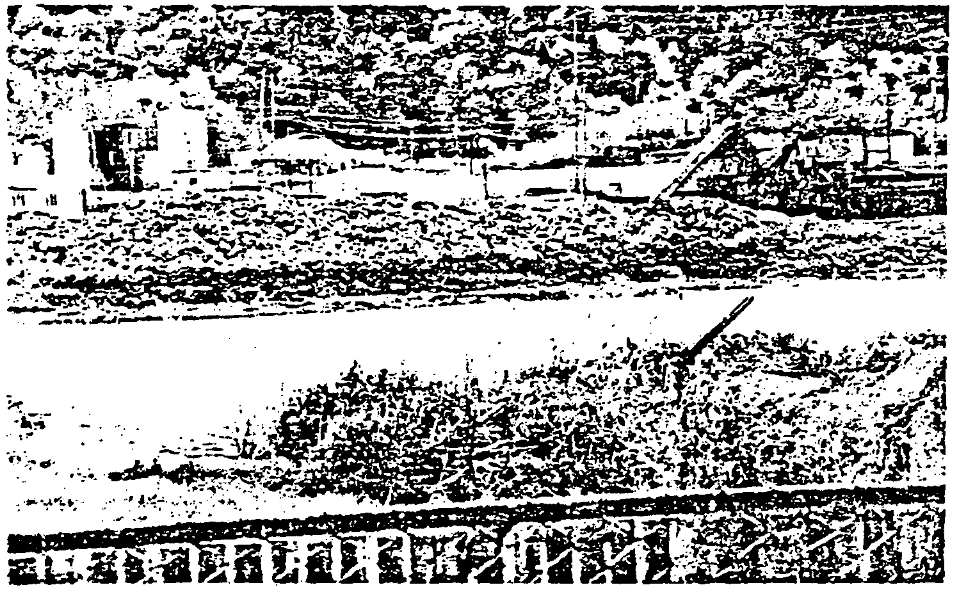
That helped. But it didn't make the choice any easier. And the rest of that alphabet soup the land out there is soaked with is equally lethal.

The lake is only 100 yards from the river, and no one really knows how much seepage there is. There is an aquifer just six feet below the area. Nobody knows what's getting into it or where it goes.

One of the interesting little problems at Doane Lake is a pile of old car battery casings. The pile contains an estimated *10,000 tons*. It covers the land up to 30 feet deep in some places. Thousands of the cases have been bulldozed into the lake.

The casings are covered with lead which is so toxic that they can't be moved, and by the same token, so toxic that they can't be left there. Every time the wind blows, lead fills the air. Every time it rains, lead fills the ground.

What has to happen is that the casings must be very carefully picked up and washed. Everything that comes off them has to be collected and contained. *Then* the casings can be moved. And then we can find out what surprises are underneath. A large machine has been designed and built to help accomplish this task, but it's not working too well yet. They hope to have it ready to go in about a month.



Doane Lake, located just south of the St. John's Bridge along St. Helens Road, has long been a dump site for hazardous waste. Currently seven companies in the vicinity are under special scrutiny by the Department of Environmental Quality, including Gould, Inc. where tons of old battery casings have leached excessive levels of lead. Gould is on the EPA's National Priorities List which includes the 400 worst toxic waste sites in the country.

The lake itself is being treated organically with microorganisms which break down some of the most virulent compounds. But that's a slow process which requires continual areation and occasional dredging to get at the stuff on the bottom.

Catch wells are being dug between the most highly contaminated sections of the site and the river to collect seepage which can then be treated. But who knows how much is getting away.

DEQ says they have sampled the river water "a couple of times," and not found anything. Somehow, that's not good enough for me.

And I wonder how many more festering pools of contamination there are around the neighborhood, around the city, around the state?

"I think we've found them all," DEQ Hazardous Waste Specialist Gary Calaba says. "I think we've located all the worst ones. It looks like just a mopping up operation from here on."

But then of course there were several hundred barrels of radioactive waste discovered a few months ago down in Central Oregon by a woman who was looking at some land she was thinking of buying. They had been left there by a disposal company which DEQ shut down, left there and forgotten about for eight years.

JAG

RECEIVED
MAY 22 1986
DEPT. OF ENVIRONMENTAL QUALITY

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
REGION 10
SEATTLE, WASHINGTON 98101

MAY 20 1986

REPLY TO
ATTN OF: M/S 525

MEMORANDUM

SUBJECT: Meeting Between EPA and State of Oregon Department of Environmental Quality to Discuss Hazardous Cleanup at Doane Lake

FROM: Patricia C. Storm PCS
Superfund Site Manager

TO: Addressees

1. The following representatives of the Environmental Protection Agency (EPA) and the State of Oregon Department of Environmental Quality (DEQ) met on March 11, 1986, to discuss the status of environmental investigations in the Doane Lake Area:

Patricia Storm, EPA, Region 10
James Everts, EPA, Region 10
Mike Gearheard, EPA, Oregon Operations Office
Chip Humphrey, EPA, Oregon Operations Office
Al Goodman, DEQ, Hazardous and Solid Waste Program
Janet Gillaspie, DEQ, Northwest Regional Office
Neil Mullane, DEQ, Hazardous and Solid Waste Program
Larry Patterson, DEQ, Water Quality Program

2. Janet Gillaspie opened the meeting by defining the boundaries of the site (see fiqure 1). The area was divided into two distinct sections. Area one was designated as south of the railroad spur; area two north of the railroad spur.

Area one includes the following companies:
Rhone-Poulenc (a pesticide producing plant)
Gould (a former smelter and battery recycling facility)
Liquid Air Products (acetylene production)
Pennwalt (inorganic chemical production)
ESCO (landfill area)

Area two includes:
Wacker Siltronic (silicon chips)
Koppers (creosote bulk storage; some pentachlorophenol handling historically)
Northwest Natural Gas (a former cokeing facility).

4. Pat Storm gave a brief update on the status of the Gould Site. Gould and NL, the present and former owners of the Gould property, respectively, agreed in an Order on Consent (dated August 1985) to complete a Remedial Investigation (RI) and Feasibility Study (FS) for their property and adjacent areas (see figure 2). The RI/FS is expected to take 18 months beginning in April of 1986.

4. Pat Storm also explained EPA's present guidance regarding expansion of the boundaries of the Gould site. The original NPL listing identified the nine acres owned by Gould Inc.. In reviewing the Preliminary Assessment we determined that the boundaries of the site should include all areas where battery casings and other smelter debris are buried. Thus, the site was extended to include portions of Rhone-Poulenc, ESCO, and Liquid Air Products. If another contaminant is found on the Gould site which originates from an upgradient source, that source could also be included in the site boundary. Rhone-Poulenc wastes are found in the groundwater below Gould property. However, since the state is already working with Rhone-Poulenc through an enforceable permit, we do not intend to enter into any additional investigations at this time. The properties north of the Gould property (West = Pennwalt, North = Wacker, etc.) which are downgradient from Gould, could not be included in the boundaries of the Gould site unless contamination from Gould was affecting them. We have not identified any downgradient problems from Gould except those outlined in the previous paragraph.

5. Larry Patterson reviewed the state's program at Rhone-Poulenc. Under a NPDES permit with the State of Oregon, Rhone-Poulenc is required to collect on-site runoff and treat that to specified levels. They are then authorized to discharge the treated water to the river. In addition, their permit must comply with the groundwater protection policy which requires that they cleanup groundwater on their property which may contaminate surface water. Due to the presence of high (100 ppm) levels of chlorophenols in the groundwater on their property, they are required to treat water withdrawn from 8 wells (30,000 gpd). The treatment includes biological digestion and carbon adsorption. The treated water is discharged into the Willamette River. This is a longterm permit which is renewed every five years. There is no estimate for how long it will take to clean the groundwater. Process water is discharged to the City of Portland sewerage system.

6. Larry Patterson stated that the state was not aware of any problems at Pennwalt or Liquid Air Products.. There was some concern about possible radioactive casting sands used as fill at the ESCO fill. However, the Health Division investigated and found no problem.

7. Janet Gillaspie described the state's activities in area two. In June 1985 Wacker Siltronic submitted a report of contaminants found at their property. The state and EPA reviewed that data. It was decided that more data are needed to perform a risk assessment at the site. They would also like to see Koppers, Northwest Natural Gas and Wacker voluntarily perform work at the site. The primary contaminants identified to date are coal tar, creosote, polynuclear aromatic hydrocarbons, and some pesticides.

8. The group agreed that EPA and the state should continue their individual efforts in area one. However, we intend to share samples and data to see that the entire area achieves a level of cleanup consistent with environmental protection.

9. The state will carry the primary reponsibility for area two. They will pursue several options for obtaining appropriate actions at the site. These include:

- a cooperative agreement with EPA for site inspections
- voluntary work by the responsible parties
- a state consent order or NPDES permit for work done by the responsible parties.

The state prefers that the individual parties form a group and perform a joint investigation. If an agreement could not be reached with the property owners and a cooperative agreement was not worked out, then EPA would be requested perform the site investigations on the property.

10. The group also agreed that the State and EPA should meet at least quarterly to discuss the status of Superfund activities.

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James Everts, EPA
Michael Gearheard, OOO
Chip Humphrey, OOO
Al Goodman, DEQ
Janet Gillaspie, DEQ
Neil Mullane, DEQ
Larry Patterson, DEQ

m Al Gorman
Hq - SD West

To J Gillespie
NWR

Subject

MESSAGE

Date 4/16 19 86

ATTACHED ARE OUR ~~...~~ COMMEN
ON THE SUMMARY OF
THE DOANES LAKE MEETING
file

Signed J A Gillespie

REPLY

Date 19

Signed

RECIPIENT—RETAIN WHITE COPY, RETURN PINK COPY.
TURN OVER FOR USE WITH WINDOW ENVELOPE.

JANET from LARRY (WQ)

NECESSARY ACTION?

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
REGION 10
SEATTLE, WASHINGTON 98101

Dept. of Environmental Quality RECEIVED APR 1 1986 NORTHWEST REGION

DEPARTMENT OF ENVIRONMENTAL QUALITY RECEIVED APR 7 1986 WATER QUALITY CONTROL

REPLY TO ATTN OF: M/S 525

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ESCO (LANDFILL AREAS

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Koppers(creosote bulk storage) SOME PENTA HANDLING HISTORICALLY.
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WEST=PENNWALT
NO. 2=WACKER

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Multco

Janet

from Larry (wq)

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
REGION 10
SEATTLE, WASHINGTON 98101

Dept. of Environmental Quality

RECEIVED APR 1 1986

NORTHWEST REGION

NECESSARY ACTION?

DEPARTMENT OF ENVIRONMENTAL QUALITY
RECEIVED APR 7 1986
WATER QUALITY CONTROL

REPLY TO ATTN OF: M/S 525

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Koppers021841

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AIR WACKER

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Neil Mullane, DEQ
Larry Patterson, DEQ

file woodes ourn

STATE OF OREGON
DEPARTMENT OF ENVIRONMENTAL QUALITY

Memorandum

To: Mike Gearheard

Date: February 11, 1986

From: JAGillaspie

Subject: Attached Results

Attached are Willamette River monitoring results from nearby the Rhone-Poulenc/Gould Battery properties. We have scheduled additional sampling to confirm the .053 mg/l penta chlorophenol number which showed up 200 feet downstream of the Pennwalt dock, at 8.5 meters. This level would not be consistant with the fish production on the Willamette. We will keep you informed. The Seattle office might be interested in the other numbers, especially the lead numbers.

Attachment
JAG/ppk

DEQ-4

ADC

1/2

DEPARTMENT OF ENVIRONMENTAL QUALITY
Request for Analysis

Laboratory No. 85-0848

Location/Site: RHONE - POULENC Date: 10/31/85 Date Received Lab: OCT 31

Collected By: All, BCA, RJK Program: 3258 Date Reported:

Purpose: Detect seepage into Willamette R Report Data To: LDP, BRC, ALS, NWR

Comments:

* Basic (P) unpreserved; Nutrient (R) add H_2SO_4 in field; Metals (Tm) HNO_3 added in lab--don't rinse; Organic(X) lab prepared mason jar

Item No.	Sampling Point Description (include time)	*Sample Container (bottle) #'s: Nutrients / Basic	DO / BOD	Metals / Organic	HERB	Test Required	Depth
1	LAB BLANK		(no metals)	~~TM1553~~ X712	X782	PPOE, GC/MS HERB diss. Pb	
2	UP RIVER, JUST BELOW PENNWALT DOCK ~20' OFF SHORE			TM1562 X585	X775		2m
3	SAME AS ABOVE ~200' OFF SHORE			TM1583 X658	X816		8.5m
4	DOWNSTREAM, APPROX 200' UP FROM WACKER OUTFALL ~20' OFFSHORE			TM1581 X612	X252		7.
5	SAME AS ABOVE ~200' OFFSHORE			TM1521 X509	X606		15.5
6	FIELD BLANK			TM1553 X813			

Dept. of Environmental Quality
RECEIVED
FEB 10 1986
NORTHWEST REGION

Laboratory comments metals filtered in field

Koppers021845

2/2

DEPARTMENT OF ENVIRONMENTAL QUALITY
Request for Analysis

Laboratory No. 85-0848

Location/Site: RHINE-POULENC Date: 10/31/85 Date Received Lab:

Collected By: All, MLA, RJK Program: 3258 Date Reported:

Purpose: Detect seepage into Well K Report Data To: LDP, BRC, ALS, NW

Comments:

* Basic (P) unpreserved; Nutrient (R) add H_2SO_4 in field; Metals (Tm) HNO_3 added in lab--don't rinse; Organic(X) mason jar lab prepared

Item No.	Sampling Point Description (include time)	*Sample Container (bottle) #'s: Nutrients Basic	DO BOD	Metals Organic	HERB	Test Required	Depth
7 1	AT RHONE-POULENC ~20' OFFSHORE			Tm1589 X801	X809	PPOE, GC/MS HERB diss Pb	2-H
8 2	SAME AS ABOVE ~200' OFFSHORE			Tm1577 X794	X810	↓	12
3							
4							
5							
6							

Laboratory comments metals filtered in field

Koppers021846

DE...TME... OF E...RON...AL ...ITY
Laboratory Data Sheet

Laboratory No: 85-0848
Program Code: 3258
Page: 1 of: 32
Analysis Completed: NOV [illegible]

Rhone-Poulenc WQH

Test Results (All units in mg/l or ~~ug/m^3~~)

Item No.	diss metals	diss Pb									
2	TM1562	<0.01									
3	TM1583	<0.01									
4	TM1581	<0.01									
5	TM1521	<0.01									
6	TM1553	<0.01									
7	TM1589	<0.01									
8	TM1577	<0.01									

Comments:

Koppers021847

2\32

HERBICIDES
GC/M

DJH

DATE: 21 NOV 85

LAB #: 85-0848
SAMPLE: X782
ITEM #: 1

AMOUNT MG/L	PARAMETER		CAS REGISTRY NUMBER
<.002	DALAPON	2,2-DICHLOROPROPIONIC ACID	75-99-0
<.002	DICAMBA	2-METHOXY-3,6-DICHLOROBENZOIC ACID	1918-00-9
<.002	MCPP	4-CHLORO-2-METHYLPHENOXYACETIC ACID	94-74-6
<.002	MCPA	2-(4-CHLORO-2-METHYLPHENOXY)PROPANOIC ACID	7085-19-0
<.002	DICHLOPROP	2-(2,4-DICHLOROPHENOXY)PROPIONIC ACID	120-36-5
<.002	2,4-D	2,4-DICHLOROPHENOXYACETIC ACID	94-75-7
<.002	SILVEX	2-(2,4,5-TRICHLOROPHENOXY)PROPIONIC ACID	93-72-1
<.002	2,4,5-T	2,4,5-TRICHLOROPHENOXYACETIC ACID	93-76-5
<.002	2,4-DB	4-(2,4-DICHLOROPHENOXY)BUTYRIC ACID	94-82-6
<.002	DINOSEB	2-SEC-BUTYL-4,6-DINITROPHENOL	88-85-7

3\32

GC/MS
ACID-BASE/NEUTRAL EXTRACTABLES

COMPLIES WITH NPDES METHOD 625
AND RCRA METHOD 8270

DATE: 28 JAN 86 DSJ

LAB #: 85-0848
SAMPLE: I712
ITEM #: 1

PAGE 1/2

AMOUNT MG/L		CAS REGISTRY NUMBER
<.001	PHENOL	108-95-2
<.001	BIS(2-CHLOROETHYL)ETHER	111-44-4
<.001	2-CHLOROPHENOL	95-57-8
<.001	1,3-DICHLOROBENZENE	541-73-1
<.001	1,4-DICHLOROBENZENE	106-46-7
<.001	1,2-DICHLOROBENZENE	95-50-1
<.001	BIS(2-CHLOROISOPROPYL)ETHER	108-60-1
<.001	2-METHYLPHENOL	95-48-7
<.001	HEXACHLOROETHANE	67-72-1
<.001	N-NITROSO-DI-N-PROPYLAMINE	621-64-7
<.001	4-METHYLPHENOL	106-44-5
<.001	NITROBENZENE	98-95-3
<.001	ISOPHORONE	78-59-1
<.001	2-NITROPHENOL	100-02-7
<.001	2,4-DIMETHYLPHENOL	105-67-9
<.001	BIS(2-CHLOROETHOXY)METHANE	111-91-1
<.001	2,4-DICHLOROPHENOL	120-83-2
<.001	1,2,4-TRICHLOROBENZENE	120-82-1
<.001	NAPHTHALENE	91-20-3
<.001	HEXACHLOROBUTADIENE	87-68-3
<.001	4-CHLORO-3-METHYLPHENOL	59-50-7
<.001	HEXACHLOROCYCLOPENTADIENE	77-47-4
<.001	2,4,6-TRICHLOROPHENOL	88-06-2
<.001	2-CHLORONAPHTHALENE	91-58-7
<.001	ACENAPHTHYLENE	208-96-8
<.001	DIMETHYLPHTHALATE	131-11-3
<.001	2,6-DINITROTOLUENE	606-20-2
<.001	ACENAPHTHENE	83-32-9
<.010	2,4-DINITROPHENOL	51-28-5
<.001	4-NITROPHENOL	100-02-7
<.001	2,4-DINITROTOLUENE	121-14-2
<.001	2,3,5,6-TETRACHLOROPHENOL	935-95-5
<.001	2,3,4,6-TETRACHLOROPHENOL	58-90-2
<.001	FLUORENE	86-73-7
<.010	DIETHYLPHTHALATE	84-66-2
<.001	4-CHLOROPHENYL PHENYL ETHER	7005-72-3
<.010	2-METHYL-4,6-DINITROPHENOL	534-52-1
<.001	N-NITROSODIPHENYLAMINE	621-64-7

4132

SAMPLE: 85-0848 X712 PAGE 2/2

AMOUNT MG/L		CAS REGISTRY NUMBER
<.001	4-BROMOPHENYL PHENYL ETHER	101-55-3
<.005	ALPHA-BHC	319-84-6
<.001	HEXACHLOROBENZENE	118-74-1
<.005	BETA-BHC	319-85-7
<.001	PENTACHLOROPHENOL	87-86-5
<.005	GAMMA-BHC (LINDANE)	58-89-9
<.001	PHENANTHRENE	85-01-8
<.001	ANTHRACENE	120-12-7
<.005	DELTA-BHC	319-86-8
<.005	HEPTACHLOR	76-44-8
<.001	DIBUTYLPHTHALATE	84-74-2
<.005	ALDRIN	309-00-2
<.005	HEPTACHLOR EPOXIDE	1024-57-3
<.001	FLUORANTHENE	206-44-0
<.001	PYRENE	129-00-0
<.005	ENDOSULFAN I	959-98-8
<.005	TRANS-NONACHLOR	39765-80-5
<.005	P,P'-DDE	72-55-9
<.005	DIELDRIN	60-57-1
<.005	ENDRIN	72-20-8
<.005	ENDOSULFAN II	33213-65-9
<.005	P,P'-DDD	72-54-8
<.001	BENZYL BUTYL PHTHALATE	85-68-7
<.005	ENDOSULFAN CYCLIC SULFATE	1031-07-8
<.005	P,P'-DDT	50-29-3
<.001	BENZ(A)ANTHRACENE	56-55-3
<.001	CHRYSENE	218-01-9
<.010	3,3'-DICHLOROBENZIDINE	91-94-1
<.001	BIS(2-ETHYLHEXYL)PHTHALATE	117-81-7
<.001	DI-N-OCTYLPHTHALATE	117-84-0
<.001	BENZ(B)FLUORANTHENE	205-99-2
<.001	BENZ(A)PYRENE	50-32-8

DJH

5/32

28 JAN 86

GC/MS SCAN ID

85-Ø848 X712

THE WATER SAMPLE WAS EXTRACTED IN METHYLENE CHLORIDE AND ANALYZED BY GC/MS. IN ADDITION TO THE PRIORITY POLLUTANT CHEMICALS, THE SAMPLE WAS SCANNED FOR ANY OTHER ORGANIC COMPOUNDS ABOVE THE DETECTION LIMIT OF .Ø1 MG/L. NO UNKNOWNS WERE IDENTIFIED ABOVE THAT DETECTION LIMIT.

6132

HERBICIDES
GC/MS

DATE: 21 NOV 85 DJH

LAB #: 85-0848
SAMPLE: X775
ITEM #: 2

AMOUNT MG/L	PARAMETER		CAS REGISTRY NUMBER
<.002	DALAPON	2,2-DICHLOROPROPIONIC ACID	75-99-0
<.002	DICAMBA	2-METHOXY-3,6-DICHLOROBENZOIC ACID	1918-00-9
<.002	MCPP	4-CHLORO-2-METHYLPHENOXYACETIC ACID	94-74-6
<.002	MCPA	2-(4-CHLORO-2-METHYLPHENOXY)PROPANOIC ACID	7085-19-0
<.002	DICHLOPROP	2-(2,4-DICHLOROPHENOXY)PROPIONIC ACID	120-36-5
<.002	2,4-D	2,4-DICHLOROPHENOXYACETIC ACID	94-75-7
<.002	SILVEX	2-(2,4,5-TRICHLOROPHENOXY)PROPIONIC ACID	93-72-1
<.002	2,4,5-T	2,4,5-TRICHLOROPHENOXYACETIC ACID	93-76-5
<.002	2,4-DB	4-(2,4-DICHLOROPHENOXY)BUTYRIC ACID	94-82-6
<.002	DINOSEB	2-SEC-BUTYL-4,6-DINITROPHENOL	88-85-7

7|32

GC/MS
ACID-BASE/NEUTRAL EXTRACTABLES

COMPLIES WITH NPDES METHOD 625
AND RCRA METHOD 8270

DATE: 28 JAN 86

LAB #: 85-0848 DJH
SAMPLE: X585
ITEM #: 2

PAGE 1/2

AMOUNT MG/L		CAS REGISTRY NUMBER
<.001	PHENOL	108-95-2
<.001	BIS(2-CHLOROETHYL)ETHER	111-44-4
<.001	2-CHLOROPHENOL	95-57-8
<.001	1,3-DICHLOROBENZENE	541-73-1
<.001	1,4-DICHLOROBENZENE	106-46-7
<.001	1,2-DICHLOROBENZENE	95-50-1
<.001	BIS(2-CHLOROISOPROPYL)ETHER	108-60-1
<.001	2-METHYLPHENOL	95-48-7
<.001	HEXACHLOROETHANE	67-72-1
<.001	N-NITROSO-DI-N-PROPYLAMINE	621-64-7
<.001	4-METHYLPHENOL	106-44-5
<.001	NITROBENZENE	98-95-3
<.001	ISOPHORONE	78-59-1
<.001	2-NITROPHENOL	100-02-7
<.001	2,4-DIMETHYLPHENOL	105-67-9
<.001	BIS(2-CHLOROETHOXY)METHANE	111-91-1
<.001	2,4-DICHLOROPHENOL	120-83-2
<.001	1,2,4-TRICHLOROBENZENE	120-82-1
<.001	NAPHTHALENE	91-20-3
<.001	HEXACHLOROBUTADIENE	87-68-3
<.001	4-CHLORO-3-METHYLPHENOL	59-50-7
<.001	HEXACHLOROCYCLOPENTADIENE	77-47-4
<.001	2,4,6-TRICHLOROPHENOL	88-06-2
<.001	2-CHLORONAPHTHALENE	91-58-7
<.001	ACENAPHTHYLENE	208-96-8
<.001	DIMETHYLPHTHALATE	131-11-3
<.001	2,6-DINITROTOLUENE	606-20-2
<.001	ACENAPHTHENE	83-32-9
<.010	2,4-DINITROPHENOL	51-28-5
<.001	4-NITROPHENOL	100-02-7
<.001	2,4-DINITROTOLUENE	121-14-2
<.001	2,3,5,6-TETRACHLOROPHENOL	935-95-5
<.001	2,3,4,6-TETRACHLOROPHENOL	58-90-2
<.001	FLUORENE	86-73-7
<.010	DIETHYLPHTHALATE	84-66-2
<.001	4-CHLOROPHENYL PHENYL ETHER	7005-72-3
<.010	2-METHYL-4,6-DINITROPHENOL	534-52-1
<.001	N-NITROSODIPHENYLAMINE	621-64-7

8/32

SAMPLE: 85-0948 X505 PAGE 2/2

AMOUNT MG/L		CAS REGISTRY NUMBER
<.001	4-BROMOPHENYL PHENYL ETHER	101-55-3
<.005	ALPHA-BHC	319-84-6
<.001	HEXACHLOROBENZENE	118-74-1
<.005	BETA-BHC	319-85-7
<.001	PENTACHLOROPHENOL	87-86-5
<.005	GAMMA-BHC (LINDANE)	58-89-9
<.001	PHENANTHRENE	85-01-8
<.001	ANTHRACENE	120-12-7
<.005	DELTA-BHC	319-86-8
<.005	HEPTACHLOR	76-44-8
<.001	DIBUTYLPHTHALATE	84-74-2
<.005	ALDRIN	309-00-2
<.005	HEPTACHLOR EPOXIDE	1024-57-3
<.001	FLUORANTHENE	206-44-0
<.001	PYRENE	129-00-0
<.005	ENDOSULFAN I	959-98-8
<.005	TRANS-NONACHLOR	39765-80-5
<.005	P,P'-DDE	72-55-9
<.005	DIELDRIN	60-57-1
<.005	ENDRIN	72-20-8
<.005	ENDOSULFAN II	33213-65-9
<.005	P,P'-DDD	72-54-8
<.001	BENZYL BUTYL PHTHALATE	85-68-7
<.005	ENDOSULFAN CYCLIC SULFATE	1031-07-8
<.005	P,P'-DDT	50-29-3
<.001	BENZ(A)ANTHRACENE	56-55-3
<.001	CHRYSENE	218-01-9
<.010	3.3'-DICHLOROBENZIDINE	91-94-1
<.001	BIS(2-ETHYLHEXYL)PHTHALATE	117-81-7
<.001	DI-N-OCTYLPHTHALATE	117-84-0
<.001	BENZ(B)FLUORANTHENE	205-99-2
<.001	BENZ(A)PYRENE	50-32-8

a132

DJH

28 JAN 86

GC/MS SCAN ID

85-Ø848 X585

THE WATER SAMPLE WAS EXTRACTED IN METHYLENE CHLORIDE AND ANALYZED BY GC/MS. IN ADDITION TO THE PRIORITY POLLUTANT CHEMICALS, THE SAMPLE WAS SCANNED FOR ANY OTHER ORGANIC COMPOUNDS ABOVE THE DETECTION LIMIT OF .Ø1 MG/L. NO UNKNOWNS WERE IDENTIFIED ABOVE THAT DETECTION LIMIT.

HERBICIDES
GC/MS

DATE: 21 NOV 85

DJH

LAB #: 85-0848
SAMPLE: X816
ITEM #: 3

AMOUNT MG/L	PARAMETER		CAS REGISTRY NUMBER
<.002	DALAPON	2,2-DICHLOROPROPIONIC ACID	75-99-0
<.002	DICAMBA	2-METHOXY-3,6-DICHLOROBENZOIC ACID	1918-00-9
<.002	MCPP	4-CHLORO-2-METHYLPHENOXYACETIC ACID	94-74-6
<.002	MCPA	2-(4-CHLORO-2-METHYLPHENOXY)PROPANOIC ACID	7085-19-0
<.002	DICHLOPROP	2-(2,4-DICHLOROPHENOXY)PROPIONIC ACID	120-36-5
<.002	2,4-D	2,4-DICHLOROPHENOXYACETIC ACID	94-75-7
<.002	SILVEX	2-(2,4,5-TRICHLOROPHENOXY)PROPIONIC ACID	93-72-1
<.002	2,4,5-T	2,4,5-TRICHLOROPHENOXYACETIC ACID	93-76-5
<.002	2,4-DB	4-(2,4-DICHLOROPHENOXY)BUTYRIC ACID	94-82-6
<.002	DINOSEB	2-SEC-BUTYL-4,6-DINITROPHENOL	88-85-7

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GC/MS
ACID-BASE/NEUTRAL EXTRACTABLES

COMPLIES WITH NPDES METHOD 625
AND RCRA METHOD 8270

DATE: 29 JAN 86 DJH

LAB #: 85-0848
SAMPLE: X658
ITEM #: 3

PAGE 1/2

AMOUNT MG/L		CAS REGISTRY NUMBER
<.001	PHENOL	108-95-2
<.001	BIS(2-CHLOROETHYL)ETHER	111-44-4
<.001	2-CHLOROPHENOL	95-57-8
<.001	1,3-DICHLOROBENZENE	541-73-1
<.001	1,4-DICHLOROBENZENE	106-46-7
<.001	1,2-DICHLOROBENZENE	95-50-1
<.001	BIS(2-CHLOROISOPROPYL)ETHER	108-60-1
<.001	2-METHYLPHENOL	95-48-7
<.001	HEXACHLOROETHANE	67-72-1
<.001	N-NITROSO-DI-N-PROPYLAMINE	621-64-7
<.001	4-METHYLPHENOL	106-44-5
<.001	NITROBENZENE	98-95-3
<.001	ISOPHORONE	78-59-1
<.001	2-NITROPHENOL	100-02-7
<.001	2,4-DIMETHYLPHENOL	105-67-9
<.001	BIS(2-CHLOROETHOXY)METHANE	111-91-1
<.001	2,4-DICHLOROPHENOL	120-83-2
<.001	1,2,4-TRICHLOROBENZENE	120-82-1
<.001	NAPHTHALENE	91-20-3
<.001	HEXACHLOROBUTADIENE	87-68-3
<.001	4-CHLORO-3-METHYLPHENOL	59-50-7
<.001	HEXACHLOROCYCLOPENTADIENE	77-47-4
<.001	2,4,6-TRICHLOROPHENOL	88-06-2
<.001	2-CHLORONAPHTHALENE	91-58-7
<.001	ACENAPHTHYLENE	208-96-8
<.001	DIMETHYLPHTHALATE	131-11-3
<.001	2,6-DINITROTOLUENE	606-20-2
<.001	ACENAPHTHENE	83-32-9
<.010	2,4-DINITROPHENOL	51-28-5
<.001	4-NITROPHENOL	100-02-7
<.001	2,4-DINITROTOLUENE	121-14-2
<.001	2,3,5,6-TETRACHLOROPHENOL	935-95-5
<.001	2,3,4,6-TETRACHLOROPHENOL	58-90-2
<.001	FLUORENE	86-73-7
<.010	DIETHYLPHTHALATE	84-66-2
<.001	4-CHLOROPHENYL PHENYL ETHER	7005-72-3
<.010	2-METHYL-4,6-DINITROPHENOL	534-52-1
<.001	N-NITROSODIPHENYLAMINE	621-64-7

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SAMPLE: 85-0848 X658 PAGE 2/2

AMOUNT MG/L		CAS REGISTRY NUMBER
<.001	4-BROMOPHENYL PHENYL ETHER	101-55-3
<.005	ALPHA-BHC	319-84-6
<.001	HEXACHLOROBENZENE	118-74-1
<.005	BETA-BHC	319-85-7
.053	PENTACHLOROPHENOL	87-86-5
<.005	GAMMA-BHC (LINDANE)	58-89-9
<.001	PHENANTHRENE	85-01-8
<.001	ANTHRACENE	120-12-7
<.005	DELTA-BHC	319-86-8
<.005	HEPTACHLOR	76-44-8
<.001	DIBUTYLPHTHALATE	84-74-2
<.005	ALDRIN	309-00-2
<.005	HEPTACHLOR EPOXIDE	1024-57-3
<.001	FLUORANTHENE	206-44-0
<.001	PYRENE	129-00-0
<.005	ENDOSULFAN I	959-98-8
<.005	TRANS-NONACHLOR	39765-80-5
<.005	P,P'-DDE	72-55-9
<.005	DIELDRIN	60-57-1
<.005	ENDRIN	72-20-8
<.005	ENDOSULFAN II	33213-65-9
<.005	P,P'-DDD	72-54-8
<.001	BENZYL BUTYL PHTHALATE	85-68-7
<.005	ENDOSULFAN CYCLIC SULFATE	1031-07-8
<.005	P,P'-DDT	50-29-3
<.001	BENZ(A)ANTHRACENE	56-55-3
<.001	CHRYSENE	218-01-9
<.010	3,3'-DICHLOROBENZIDINE	91-94-1
<.001	BIS(2-ETHYLHEXYL)PHTHALATE	117-81-7
<.001	DI-N-OCTYLPHTHALATE	117-84-0
<.001	BENZ(B)FLUORANTHENE	205-99-2
<.001	BENZ(A)PYRENE	50-32-8

penta concentration
in consistant
w/ fish production
on Willamette.
Requested lab
to resample

J Gillaspie
7/11/86

\5132

DJH

29 JAN 86

GC/MS SCAN ID

85-Ø848 X658

THE WATER SAMPLE WAS EXTRACTED IN METHYLENE CHLORIDE AND ANALYZED BY GC/MS. IN ADDITION TO THE PRIORITY POLLUTANT CHEMICALS, THE SAMPLE WAS SCANNED FOR ANY OTHER ORGANIC COMPOUNDS ABOVE THE DETECTION LIMIT OF .Ø1 MG/L. NO UNKNOWNS WERE IDENTIFIED ABOVE THAT DETECTION LIMIT.

14/32

HERBICIDES
GC/MS

DJH

DATE: 21 NOV 85

LAB #: 85-0848
SAMPLE: X252
ITEM #: 4

AMOUNT MG/L	PARAMETER		CAS REGISTRY NUMBER
<.002	DALAPON	2,2-DICHLOROPROPIONIC ACID	75-99-0
<.002	DICAMBA	2-METHOXY-3,6-DICHLOROBENZOIC ACID	1918-00-9
<.002	MCPP	4-CHLORO-2-METHYLPHENOXYACETIC ACID	94-74-6
<.002	MCPA	2-(4-CHLORO-2-METHYLPHENOXY)PROPANOIC ACID	7085-19-0
<.002	DICHLOPROP	2-(2,4-DICHLOROPHENOXY)PROPIONIC ACID	120-36-5
<.002	2,4-D	2,4-DICHLOROPHENOXYACETIC ACID	94-75-7
<.002	SILVEX	2-(2,4,5-TRICHLOROPHENOXY)PROPIONIC ACID	93-72-1
<.002	2,4,5-T	2,4,5-TRICHLOROPHENOXYACETIC ACID	93-76-5
<.002	2,4-DB	4-(2,4-DICHLOROPHENOXY)BUTYRIC ACID	94-82-6
<.002	DINOSEB	2-SEC-BUTYL-4,6-DINITROPHENOL	88-85-7

15/32

GC/MS
ACID-BASE/NEUTRAL EXTRACTABLES

COMPLIES WITH NPDES METHOD 625
AND RCRA METHOD 8270

DATE: 28 JAN 86 DJH

LAB #: 85-0848
SAMPLE: X612
ITEM #: 4

PAGE 1/2

AMOUNT MG/L		CAS REGISTRY NUMBER
<.001	PHENOL	108-95-2
<.001	BIS(2-CHLOROETHYL)ETHER	111-44-4
<.001	2-CHLOROPHENOL	95-57-8
<.001	1,3-DICHLOROBENZENE	541-73-1
<.001	1,4-DICHLOROBENZENE	106-46-7
<.001	1,2-DICHLOROBENZENE	95-50-1
<.001	BIS(2-CHLOROISOPROPYL)ETHER	108-60-1
<.001	2-METHYLPHENOL	95-48-7
<.001	HEXACHLOROETHANE	67-72-1
<.001	N-NITROSO-DI-N-PROPYLAMINE	621-64-7
<.001	4-METHYLPHENOL	106-44-5
<.001	NITROBENZENE	98-95-3
<.001	ISOPHORONE	78-59-1
<.001	2-NITROPHENOL	100-02-7
<.001	2,4-DIMETHYLPHENOL	105-67-9
<.001	BIS(2-CHLOROETHOXY)METHANE	111-91-1
<.001	2,4-DICHLOROPHENOL	120-83-2
<.001	1,2,4-TRICHLOROBENZENE	120-82-1
<.001	NAPHTHALENE	91-20-3
<.001	HEXACHLOROBUTADIENE	87-68-3
<.001	4-CHLORO-3-METHYLPHENOL	59-50-7
<.001	HEXACHLOROCYCLOPENTADIENE	77-47-4
<.001	2,4,6-TRICHLOROPHENOL	88-06-2
<.001	2-CHLORONAPHTHALENE	91-58-7
<.001	ACENAPHTHYLENE	208-96-8
<.001	DIMETHYLPHTHALATE	131-11-3
<.001	2.6-DINITROTOLUENE	606-20-2
<.001	ACENAPHTHENE	83-32-9
<.010	2.4-DINITROPHENOL	51-28-5
<.001	4-NITROPHENOL	100-02-7
<.001	2,4-DINITROTOLUENE	121-14-2
<.001	2,3,5,6-TETRACHLOROPHENOL	935-95-5
<.001	2,3,4,6-TETRACHLOROPHENOL	58-90-2
<.001	FLUORENE	86-73-7
<.010	DIETHYLPHTHALATE	84-66-2
<.001	4-CHLOROPHENYL PHENYL ETHER	7005-72-3
<.010	2-METHYL-4.6-DINITROPHENOL	534-52-1
<.001	N-NITROSODIPHENYLAMINE	621-64-7

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SAMPLE: 85-0848 X612 PAGE 2/2

AMOUNT MG/L		CAS REGISTRY NUMBER
<.001	4-BROMOPHENYL PHENYL ETHER	101-55-3
<.005	ALPHA-BHC	319-84-6
<.001	HEXACHLOROBENZENE	118-74-1
<.005	BETA-BHC	319-85-7
<.001	PENTACHLOROPHENOL	87-86-5
<.005	GAMMA-BHC (LINDANE)	58-89-9
<.001	PHENANTHRENE	85-01-8
<.001	ANTHRACENE	120-12-7
<.005	DELTA-BHC	319-86-8
<.005	HEPTACHLOR	76-44-8
<.001	DIBUTYLPHTHALATE	84-74-2
<.005	ALDRIN	309-00-2
<.005	HEPTACHLOR EPOXIDE	1024-57-3
<.001	FLUORANTHENE	206-44-0
<.001	PYRENE	129-00-0
<.005	ENDOSULFAN I	959-98-8
<.005	TRANS-NONACHLOR	39765-80-5
<.005	P,P'-DDE	72-55-9
<.005	DIELDRIN	60-57-1
<.005	ENDRIN	72-20-8
<.005	ENDOSULFAN II	33213-65-9
<.005	P,P'-DDD	72-54-8
<.001	BENZYL BUTYL PHTHALATE	85-68-7
<.005	ENDOSULFAN CYCLIC SULFATE	1031-07-8
<.005	P,P'-DDT	50-29-3
<.001	BENZ(A)ANTHRACENE	56-55-3
<.001	CHRYSENE	218-01-9
<.010	3,3'-DICHLOROBENZIDINE	91-94-1
<.001	BIS(2-ETHYLHEXYL)PHTHALATE	117-81-7
<.001	DI-N-OCTYLPHTHALATE	117-84-0
<.001	BENZ(B)FLUORANTHENE	205-99-2
<.001	BENZ(A)PYRENE	50-32-8

17132

DJH

28 JAN 86

GC/MS SCAN ID

85-Ø848 X612

THE WATER SAMPLE WAS EXTRACTED IN METHYLENE CHLORIDE AND ANALYZED BY GC/MS. IN ADDITION TO THE PRIORITY POLLUTANT CHEMICALS, THE SAMPLE WAS SCANNED FOR ANY OTHER ORGANIC COMPOUNDS ABOVE THE DETECTION LIMIT OF .Ø1 MG/L. NO UNKNOWNS WERE IDENTIFIED ABOVE THAT DETECTION LIMIT.

18\32

HERBICIDES
GC/MS

DATE: 21 NOV 85 DJH

LAB #: 85-0848
SAMPLE: X606
ITEM #: 5

AMOUNT MG/L	PARAMETER		CAS REGISTRY NUMBER
<.002	DALAPON	2,2-DICHLOROPROPIONIC ACID	75-99-0
<.002	DICAMBA	2-METHOXY-3,6-DICHLOROBENZOIC ACID	1918-00-9
<.002	MCPP	4-CHLORO-2-METHYLPHENOXYACETIC ACID	94-74-6
<.002	MCPA	2-(4-CHLORO-2-METHYLPHENOXY)PROPANOIC ACID	7085-19-0
<.002	DICHLOPROP	2-(2,4-DICHLOROPHENOXY)PROPIONIC ACID	120-36-5
<.002	2,4-D	2,4-DICHLOROPHENOXYACETIC ACID	94-75-7
<.002	SILVEX	2-(2,4,5-TRICHLOROPHENOXY)PROPIONIC ACID	93-72-1
<.002	2,4,5-T	2,4,5-TRICHLOROPHENOXYACETIC ACID	93-76-5
<.002	2,4-DB	4-(2,4-DICHLOROPHENOXY)BUTYRIC ACID	94-82-6
<.002	DINOSEB	2-SEC-BUTYL-4,6-DINITROPHENOL	88-85-7

17/32

GC/MS
ACID-BASE/NEUTRAL EXTRACTABLES

COMPLIES WITH NPDES METHOD 625
AND RCRA METHOD 8270

DATE: 28 JAN 86 DJH

LAB #: 85-0948
SAMPLE: X509
ITEM #: 5

AMOUNT MG/L		CAS REGISTRY NUMBER
<.001	PHENOL	108-95-2
<.001	BIS(2-CHLOROETHYL)ETHER	111-44-4
<.001	2-CHLOROPHENOL	95-57-8
<.001	1,3-DICHLOROBENZENE	541-73-1
<.001	1,4-DICHLOROBENZENE	106-46-7
<.001	1,2-DICHLOROBENZENE	95-50-1
<.001	BIS(2-CHLOROISOPROPYL)ETHER	108-60-1
<.001	2-METHYLPHENOL	95-48-7
<.001	HEXACHLOROETHANE	67-72-1
<.001	N-NITROSO-DI-N-PROPYLAMINE	621-64-7
<.001	4-METHYLPHENOL	106-44-5
<.001	NITROBENZENE	98-95-3
<.001	ISOPHORONE	78-59-1
<.001	2-NITROPHENOL	100-02-7
<.001	2,4-DIMETHYLPHENOL	105-67-9
<.001	BIS(2-CHLOROETHOXY)METHANE	111-91-1
<.001	2,4-DICHLOROPHENOL	120-83-2
<.001	1,2,4-TRICHLOROBENZENE	120-82-1
<.001	NAPHTHALENE	91-20-3
<.001	HEXACHLOROBUTADIENE	87-68-3
<.001	4-CHLORO-3-METHYLPHENOL	59-50-7
<.001	HEXACHLOROCYCLOPENTADIENE	77-47-4
<.001	2,4,6-TRICHLOROPHENOL	88-06-2
<.001	2-CHLORONAPHTHALENE	91-58-7
<.001	ACENAPHTHYLENE	208-96-8
<.001	DIMETHYLPHTHALATE	131-11-3
<.001	2,6-DINITROTOLUENE	606-20-2
<.001	ACENAPHTHENE	83-32-9
<.010	2,4-DINITROPHENOL	51-28-5
<.001	4-NITROPHENOL	100-02-7
<.001	2,4-DINITROTOLUENE	121-14-2
<.001	2,3,5,6-TETRACHLOROPHENOL	935-95-5
<.001	2,3,4,6-TETRACHLOROPHENOL	58-90-2
<.001	FLUORENE	86-73-7
<.010	DIETHYLPHTHALATE	84-66-2
<.001	4-CHLOROPHENYL PHENYL ETHER	7005-72-3
<.010	2-METHYL-4,6-DINITROPHENOL	534-52-1
<.001	N-NITROSODIPHENYLAMINE	621-64-7

20/32

AMOUNT MG/L		CAS REGISTRY NUMBER
<.001	4-BROMOPHENYL PHENYL ETHER	101-55-3
<.005	ALPHA-BHC	319-84-6
<.001	HEXACHLOROBENZENE	118-74-1
<.005	BETA-BHC	319-85-7
<.001	PENTACHLOROPHENOL	87-86-5
<.005	GAMMA-BHC (LINDANE)	58-89-9
<.001	PHENANTHRENE	85-01-8
<.001	ANTHRACENE	120-12-7
<.005	DELTA-BHC	319-86-8
<.005	HEPTACHLOR	76-44-8
<.001	DIBUTYLPHTHALATE	84-74-2
<.005	ALDRIN	309-00-2
<.005	HEPTACHLOR EPOXIDE	1024-57-3
<.001	FLUORANTHENE	206-44-0
<.001	PYRENE	129-00-0
<.005	ENDOSULFAN I	959-98-8
<.005	TRANS-NONACHLOR	39765-80-5
<.005	P,P'-DDE	72-55-9
<.005	DIELDRIN	60-57-1
<.005	ENDRIN	72-20-8
<.005	ENDOSULFAN II	33213-65-9
<.005	P,P'-DDD	72-54-8
<.001	BENZYL BUTYL PHTHALATE	85-68-7
<.005	ENDOSULFAN CYCLIC SULFATE	1031-07-8
<.005	P,P'-DDT	50-29-3
<.001	BENZ(A)ANTHRACENE	56-55-3
<.001	CHRYSENE	218-01-9
<.010	3,3'-DICHLOROBENZIDINE	91-94-1
<.001	BIS(2-ETHYLHEXYL)PHTHALATE	117-81-7
<.001	DI-N-OCTYLPHTHALATE	117-84-0
<.001	BENZ(B)FLUORANTHENE	205-99-2
<.001	BENZ(A)PYRENE	50-32-8

21/32

DJH

23 JAN 86

<u>GC/MS SCAN ID</u>

85-0848 X509

THE WATER SAMPLE WAS EXTRACTED IN METHYLENE CHLORIDE AND ANALYZED BY GC/MS. IN ADDITION TO THE PRIORITY POLLUTANT CHEMICALS, THE SAMPLE WAS SCANNED FOR ANY OTHER ORGANIC COMPOUNDS ABOVE THE DETECTION LIMIT OF .01 MG/L. NO UNKNOWNS WERE IDENTIFIED ABOVE THAT DETECTION LIMIT.

22/32

GC/MS
ACID-BASE/NEUTRAL EXTRACTABLES

COMPLIES WITH NPDES METHOD 625
AND RCRA METHOD 8270

DATE: 27 JAN 86 DJH

LAB #: 85-0848
SAMPLE: X813
ITEM #: 6

PAGE 1/2

AMOUNT MG/L		CAS REGISTRY NUMBER
<.001	PHENOL	108-95-2
<.001	BIS(2-CHLOROETHYL)ETHER	111-44-4
<.001	2-CHLOROPHENOL	95-57-8
<.001	1,3-DICHLOROBENZENE	541-73-1
<.001	1,4-DICHLOROBENZENE	106-46-7
<.001	1,2-DICHLOROBENZENE	95-50-1
<.001	BIS(2-CHLOROISOPROPYL)ETHER	108-60-1
<.001	2-METHYLPHENOL	95-48-7
<.001	HEXACHLOROETHANE	67-72-1
<.001	N-NITROSO-DI-N-PROPYLAMINE	621-64-7
<.001	4-METHYLPHENOL	106-44-5
<.001	NITROBENZENE	98-95-3
<.001	ISOPHORONE	78-59-1
<.001	2-NITROPHENOL	100-02-7
<.001	2,4-DIMETHYLPHENOL	105-67-9
<.001	BIS(2-CHLOROETHOXY)METHANE	111-91-1
<.001	2,4-DICHLOROPHENOL	120-83-2
<.001	1,2,4-TRICHLOROBENZENE	120-82-1
<.001	NAPHTHALENE	91-20-3
<.001	HEXACHLOROBUTADIENE	87-68-3
<.001	4-CHLORO-3-METHYLPHENOL	59-50-7
<.001	HEXACHLOROCYCLOPENTADIENE	77-47-4
<.001	2,4,6-TRICHLOROPHENOL	88-06-2
<.001	2-CHLORONAPHTHALENE	91-58-7
<.001	ACENAPHTHYLENE	208-96-8
<.001	DIMETHYLPHTHALATE	131-11-3
<.001	2,6-DINITROTOLUENE	606-20-2
<.001	ACENAPHTHENE	83-32-9
<.010	2,4-DINITROPHENOL	51-28-5
<.001	4-NITROPHENOL	100-02-7
<.001	2,4-DINITROTOLUENE	121-14-2
<.001	2,3,5,6-TETRACHLOROPHENOL	935-95-5
<.001	2,3,4,6-TETRACHLOROPHENOL	58-90-2
<.001	FLUORENE	86-73-7
<.010	DIETHYLPHTHALATE	84-66-2
<.001	4-CHLOROPHENYL PHENYL ETHER	7005-72-3
<.010	2-METHYL-4,6-DINITROPHENOL	534-52-1
<.001	N-NITROSODIPHENYLAMINE	621-64-7

23/32

SAMPLE: 85-0848 XB13 PAGE 2/2

AMOUNT MG/L		CAS REGISTRY NUMBER
<.001	4-BROMOPHENYL PHENYL ETHER	101-55-3
<.005	ALPHA-BHC	319-84-6
<.001	HEXACHLOROBENZENE	118-74-1
<.005	BETA-BHC	319-85-7
<.001	PENTACHLOROPHENOL	87-86-5
<.005	GAMMA-BHC (LINDANE)	58-89-9
<.001	PHENANTHRENE	85-01-8
<.001	ANTHRACENE	120-12-7
<.005	DELTA-BHC	319-86-8
<.005	HEPTACHLOR	76-44-8
<.001	DIBUTYLPHTHALATE	84-74-2
<.005	ALDRIN	309-00-2
<.005	HEPTACHLOR EPOXIDE	1024-57-3
<.001	FLUORANTHENE	206-44-0
<.001	PYRENE	129-00-0
<.005	ENDOSULFAN I	959-98-8
<.005	TRANS-NONACHLOR	39765-80-5
<.005	P,P'-DDE	72-55-9
<.005	DIELDRIN	60-57-1
<.005	ENDRIN	72-20-8
<.005	ENDOSULFAN II	33213-65-9
<.005	P,P'-DDD	72-54-8
<.001	BENZYL BUTYL PHTHALATE	85-68-7
<.005	ENDOSULFAN CYCLIC SULFATE	1031-07-8
<.005	P,P'-DDT	50-29-3
<.001	BENZ(A)ANTHRACENE	56-55-3
<.001	CHRYSENE	218-01-9
<.010	3,3'-DICHLOROBENZIDINE	91-94-1
<.001	BIS(2-ETHYLHEXYL)PHTHALATE	117-81-7
<.001	DI-N-OCTYLPHTHALATE	117-84-0
<.001	BENZ(B)FLUORANTHENE	205-99-2
<.001	BENZ(A)PYRENE	50-32-8

24/32

DJH

27 JAN 86

GC/MS SCAN ID

85-Ø848 X813

THE WATER SAMPLE WAS EXTRACTED IN METHYLENE CHLORIDE AND ANALYZED BY GC/MS. IN ADDITION TO THE PRIORITY POLLUTANT CHEMICALS, THE SAMPLE WAS SCANNED FOR ANY OTHER ORGANIC COMPOUNDS ABOVE THE DETECTION LIMIT OF .Ø1 MG/L. NO UNKNOWNS WERE IDENTIFIED ABOVE THAT DETECTION LIMIT.

25/32

HERBICIDES
GC/MS

DATE: 21 NOV 85 DJH

LAB #: 85-0849
SAMPLE: X939
ITEM #: 7

AMOUNT MG/L	PARAMETER		CAS REGISTRY NUMBER
<.002	DALAPON	2,2-DICHLOROPROPIONIC ACID	75-99-0
<.002	DICAMBA	2-METHOXY-3,6-DICHLOROBENZOIC ACID	1918-00-9
<.002	MCPP	4-CHLORO-2-METHYLPHENOXYACETIC ACID	94-74-6
<.002	MCPA	2-(4-CHLORO-2-METHYLPHENOXY)PROPANOIC ACID	7085-19-0
<.002	DICHLOPROP	2-(2,4-DICHLOROPHENOXY)PROPIONIC ACID	120-36-5
<.002	2,4-D	2,4-DICHLOROPHENOXYACETIC ACID	94-75-7
<.002	SILVEX	2-(2,4,5-TRICHLOROPHENOXY)PROPIONIC ACID	93-72-1
<.002	2,4,5-T	2,4,5-TRICHLOROPHENOXYACETIC ACID	93-76-5
<.002	2,4-DB	4-(2,4-DICHLOROPHENOXY)BUTYRIC ACID	94-82-6
<.002	DINOSEB	2-SEC-BUTYL-4,6-DINITROPHENOL	88-85-7

24/32

GC/MS
ACID-BASE/NEUTRAL EXTRACTABLES

COMPLIES WITH NPDES METHOD 625
AND RCRA METHOD 8270

DATE: 28 JAN 86 DJH

LAB #: 85-0848
SAMPLE: X801
ITEM #: 7

PAGE 1/2

AMOUNT MG/L		CAS REGISTRY NUMBER
<.001	PHENOL	108-95-2
<.001	BIS(2-CHLOROETHYL)ETHER	111-44-4
<.001	2-CHLOROPHENOL	95-57-8
<.001	1,3-DICHLOROBENZENE	541-73-1
<.001	1,4-DICHLOROBENZENE	106-46-7
<.001	1,2-DICHLOROBENZENE	95-50-1
<.001	BIS(2-CHLOROISOPROPYL)ETHER	108-60-1
<.001	2-METHYLPHENOL	95-48-7
<.001	HEXACHLOROETHANE	67-72-1
<.001	N-NITROSO-DI-N-PROPYLAMINE	621-64-7
<.001	4-METHYLPHENOL	106-44-5
<.001	NITROBENZENE	98-95-3
<.001	ISOPHORONE	78-59-1
<.001	2-NITROPHENOL	100-02-7
<.001	2,4-DIMETHYLPHENOL	105-67-9
<.001	BIS(2-CHLOROETHOXY)METHANE	111-91-1
<.001	2,4-DICHLOROPHENOL	120-83-2
<.001	1,2,4-TRICHLOROBENZENE	120-82-1
<.001	NAPHTHALENE	91-20-3
<.001	HEXACHLOROBUTADIENE	87-68-3
<.001	4-CHLORO-3-METHYLPHENOL	59-50-7
<.001	HEXACHLOROCYCLOPENTADIENE	77-47-4
<.001	2,4,6-TRICHLOROPHENOL	88-06-2
<.001	2-CHLORONAPHTHALENE	91-58-7
<.001	ACENAPHTHYLENE	208-96-8
<.001	DIMETHYLPHTHALATE	131-11-3
<.001	2,6-DINITROTOLUENE	606-20-2
<.001	ACENAPHTHENE	83-32-9
<.010	2,4-DINITROPHENOL	51-28-5
<.001	4-NITROPHENOL	100-02-7
<.001	2,4-DINITROTOLUENE	121-14-2
<.001	2,3,5,6-TETRACHLOROPHENOL	935-95-5
<.001	2,3,4,6-TETRACHLOROPHENOL	58-90-2
<.001	FLUORENE	86-73-7
<.010	DIETHYLPHTHALATE	84-66-2
<.001	4-CHLOROPHENYL PHENYL ETHER	7005-72-3
<.010	2-METHYL-4,6-DINITROPHENOL	534-52-1
<.001	N-NITROSODIPHENYLAMINE	621-64-7

27/32

SAMPLE: 85-0848 X801 PAGE 2/2

AMOUNT MG/L		CAS REGISTRY NUMBER
<.001	4-BROMOPHENYL PHENYL ETHER	101-55-3
<.005	ALPHA-BHC	319-84-6
<.001	HEXACHLOROBENZENE	118-74-1
<.005	BETA-BHC	319-85-7
<.001	PENTACHLOROPHENOL	87-86-5
<.005	GAMMA-BHC (LINDANE)	58-89-9
<.001	PHENANTHRENE	85-01-8
<.001	ANTHRACENE	120-12-7
<.005	DELTA-BHC	319-86-8
<.005	HEPTACHLOR	76-44-8
<.001	DIBUTYLPHTHALATE	84-74-2
<.005	ALDRIN	309-00-2
<.005	HEPTACHLOR EPOXIDE	1024-57-3
<.001	FLUORANTHENE	206-44-0
<.001	PYRENE	129-00-0
<.005	ENDOSULFAN I	959-98-8
<.005	TRANS-NONACHLOR	39765-80-5
<.005	P,P'-DDE	72-55-9
<.005	DIELDRIN	60-57-1
<.005	ENDRIN	72-20-8
<.005	ENDOSULFAN II	33213-65-9
<.005	P,P'-DDD	72-54-8
<.001	BENZYL BUTYL PHTHALATE	85-68-7
<.005	ENDOSULFAN CYCLIC SULFATE	1031-07-8
<.005	P,P'-DDT	50-29-3
<.001	BENZ(A)ANTHRACENE	56-55-3
<.001	CHRYSENE	218-01-9
<.010	3,3'-DICHLOROBENZIDINE	91-94-1
<.001	BIS(2-ETHYLHEXYL)PHTHALATE	117-81-7
<.001	DI-N-OCTYLPHTHALATE	117-84-0
<.001	BENZ(B)FLUORANTHENE	205-99-2
<.001	BENZ(A)PYRENE	50-32-8

28/32

DJH

28 JAN 86

GC/MS SCAN ID

85-Ø848 X8Ø1

THE WATER SAMPLE WAS EXTRACTED IN METHYLENE CHLORIDE AND ANALYZED BY GC/MS. IN ADDITION TO THE PRIORITY POLLUTANT CHEMICALS, THE SAMPLE WAS SCANNED FOR ANY OTHER ORGANIC COMPOUNDS ABOVE THE DETECTION LIMIT OF .Ø1 MG/L. NO UNKNOWNS WERE IDENTIFIED ABOVE THAT DETECTION LIMIT.

29/32

HERBICIDES
GC/MS

DATE: 21 NOV 85

DJH

LAB #: 85-0848
SAMPLE: X810
ITEM #: 8

AMOUNT MG/L	PARAMETER		CAS REGISTRY NUMBER
<.002	DALAPON	2,2-DICHLOROPROPIONIC ACID	75-99-0
<.002	DICAMBA	2-METHOXY-3,6-DICHLOROBENZOIC ACID	1918-00-9
<.002	MCPP	4-CHLORO-2-METHYLPHENOXYACETIC ACID	94-74-6
<.002	MCPA	2-(4-CHLORO-2-METHYLPHENOXY)PROPANOIC ACID	7085-19-0
<.002	DICHLOPROP	2-(2,4-DICHLOROPHENOXY)PROPIONIC ACID	120-36-5
<.002	2,4-D	2,4-DICHLOROPHENOXYACETIC ACID	94-75-7
<.002	SILVEX	2-(2,4,5-TRICHLOROPHENOXY)PROPIONIC ACID	93-72-1
<.002	2,4,5-T	2,4,5-TRICHLOROPHENOXYACETIC ACID	93-76-5
<.002	2,4-DB	4-(2,4-DICHLOROPHENOXY)BUTYRIC ACID	94-82-6
<.002	DINOSEB	2-SEC-BUTYL-4,6-DINITROPHENOL	88-85-7

30\32

GC/MS
ACID-BASE/NEUTRAL EXTRACTABLES

COMPLIES WITH NPDES METHOD 625
AND RCRA METHOD 8270

DATE: 27 JAN 86 DJH

LAB #: 85-0848
SAMPLE: X794
ITEM #: 8

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AMOUNT MG/L		CAS REGISTRY NUMBER
<.001	PHENOL	108-95-2
<.001	BIS(2-CHLOROETHYL)ETHER	111-44-4
<.001	2-CHLOROPHENOL	95-57-8
<.001	1,3-DICHLOROBENZENE	541-73-1
<.001	1,4-DICHLOROBENZENE	106-46-7
<.001	1,2-DICHLOROBENZENE	95-50-1
<.001	BIS(2-CHLOROISOPROPYL)ETHER	108-60-1
<.001	2-METHYLPHENOL	95-48-7
<.001	HEXACHLOROETHANE	67-72-1
<.001	N-NITROSO-DI-N-PROPYLAMINE	621-64-7
<.001	4-METHYLPHENOL	106-44-5
<.001	NITROBENZENE	98-95-3
<.001	ISOPHORONE	78-59-1
<.001	2-NITROPHENOL	100-02-7
<.001	2,4-DIMETHYLPHENOL	105-67-9
<.001	BIS(2-CHLOROETHOXY)METHANE	111-91-1
<.001	2,4-DICHLOROPHENOL	120-83-2
<.001	1,2,4-TRICHLOROBENZENE	120-82-1
<.001	NAPHTHALENE	91-20-3
<.001	HEXACHLOROBUTADIENE	87-68-3
<.001	4-CHLORO-3-METHYLPHENOL	59-50-7
<.001	HEXACHLOROCYCLOPENTADIENE	77-47-4
<.001	2,4,6-TRICHLOROPHENOL	88-06-2
<.001	2-CHLORONAPHTHALENE	91-58-7
<.001	ACENAPHTHYLENE	203-96-8
<.001	DIMETHYLPHTHALATE	131-11-3
<.001	2,6-DINITROTOLUENE	606-20-2
<.001	ACENAPHTHENE	83-32-9
<.010	2,4-DINITROPHENOL	51-28-5
<.001	4-NITROPHENOL	100-02-7
<.001	2,4-DINITROTOLUENE	121-14-2
<.001	2,3,5,6-TETRACHLOROPHENOL	935-95-5
<.001	2,3,4,6-TETRACHLOROPHENOL	58-90-2
<.001	FLUORENE	86-73-7
<.010	DIETHYLPHTHALATE	84-66-2
<.001	4-CHLOROPHENYL PHENYL ETHER	7005-72-3
<.010	2-METHYL-4,6-DINITROPHENOL	534-52-1
<.001	N-NITROSODIPHENYLAMINE	621-64-7

31/32

AMOUNT MG/L		CAS REGISTRY NUMBER
<.001	4-BROMOPHENYL PHENYL ETHER	101-55-3
<.005	ALPHA-BHC	319-84-6
<.001	HEXACHLOROBENZENE	118-74-1
<.005	BETA-BHC	319-85-7
<.001	PENTACHLOROPHENOL	87-86-5
<.005	GAMMA-BHC (LINDANE)	58-89-9
<.001	PHENANTHRENE	85-01-8
<.001	ANTHRACENE	120-12-7
<.005	DELTA-BHC	319-86-8
<.005	HEPTACHLOR	76-44-8
<.001	DIBUTYLPHTHALATE	84-74-2
<.005	ALDRIN	309-00-2
<.005	HEPTACHLOR EPOXIDE	1024-57-3
<.001	FLUORANTHENE	206-44-0
<.001	PYRENE	129-00-0
<.005	ENDOSULFAN I	959-98-8
<.005	TRANS-NONACHLOR	39765-80-5
<.005	P,P'-DDE	72-55-9
<.005	DIELDRIN	60-57-1
<.005	ENDRIN	72-20-8
<.005	ENDOSULFAN II	33213-65-9
<.005	P,P'-DDD	72-54-8
<.001	BENZYL BUTYL PHTHALATE	85-68-7
<.005	ENDOSULFAN CYCLIC SULFATE	1031-07-8
<.005	P,P'-DDT	50-29-3
<.001	BENZ(A)ANTHRACENE	56-55-3
<.001	CHRYSENE	218-01-9
<.010	3,3'-DICHLOROBENZIDINE	91-94-1
<.001	BIS(2-ETHYLHEXYL)PHTHALATE	117-81-7
<.001	DI-N-OCTYLPHTHALATE	117-84-0
<.001	BENZ(B)FLUORANTHENE	205-99-2
<.001	BENZ(A)PYRENE	50-32-8

32/32

DJH

27 JAN 86

GC/MS SCAN ID

85-Ø848 X794

THE WATER SAMPLE WAS EXTRACTED IN METHYLENE CHLORIDE AND ANALYZED BY GC/MS. IN ADDITION TO THE PRIORITY POLLUTANT CHEMICALS, THE SAMPLE WAS SCANNED FOR ANY OTHER ORGANIC COMPOUNDS ABOVE THE DETECTION LIMIT OF .Ø1 MG/L. NO UNKNOWNS WERE IDENTIFIED ABOVE THAT DETECTION LIMIT.

VICTOR ATIYEH
Governor

Department of Environmental Quality

522 S.W. FIFTH AVENUE, BOX 1760, PORTLAND, OREGON 97207 PHONE: (503) 229-5696

January 3, 1985

Chuck Findley
Environmental Protection Agency
1200 Sixth Avenue
Seattle, WA 98101

Dept. of Environmental Quality
RECEIVED
JAN 8 1986
NORTHWEST REGION

Dear Chuck:

Our staff has been reviewing with EPA staff the possible environmental impacts from past practice activities at the northern end of an industrial district in northwest Portland known as Doane's Lake. The southern end of the district includes Gould Battery, which is listed on the National Priorities List.

Wacker Siltronics owns property adjacent to the railroad bridge, on the northern side. They are planning on building an expansion of their facility between their existing plant near the River and the highway. Some initial screening of soil and groundwater sampling conducted by their consultant showed coal tar and cresote contamination in the soil, and some lesser contamination in the groundwater. Wacker has placed its plans for the expansion of the Portland facility on hold, in part due to this contamination, and in part due to the world semiconductor market.

The extent of pollution caused by past practice activities in the Doane's Lake district has always been of concern to the Department. Now that the Rhone Poulenc facility is on a long-term groundwater cleanup program, and with EPA's work at Gould, it seems the appropriate time to tackle the northern end of the district. Our timetable is, of course, speeded up by Wacker's desire to have a clean bill of health, or at least better understandi g of the risks, for the property where their plant expansion would be built.

Because of the interweaving of state and federal roles and responsibilities in this area, we believe it would be best to lay out what the federal and state responsibilities should be in addressing this Doane's Lake district. Our staff have met together several times to discuss their various ideas about the work which might need to be done. It seems to me that it would be best to finalize these discussions into written form so that both your staff and mine, along with the affected companies and property owners, know what to expect.

DQ-2

Because, as I mentioned, we want to get an answer to Wacker, and due to our own desire to better understand the possible environmental problems in the areas, I would appreciate your thoughts on this as soon as possible. We might wish to discuss at our January meeting scheduled in Seattle.

Should you have questions, please call me at (503) 229-5356.

Sincerely,

Michael Downs

Michael J. Downs
Administrator
Hazardous and Solid Waste Division

JAG:f
RF662
cc: Wacker Siltronics
EPA, Oregon Operations
EPA, Superfund
Director's Office, DEQ
Water Quality Division, DEQ

Doan's Lake

MEMORANDUM

TO: LARRY PATTERSON) cc sent

CHUCK CLINTON

CHARLIE GRAY

FR: JAGILLASPIE jag

DT: 20 NOV 85

re: meeting with local officals on Doane's Lake

I never scheduled the meeting with local officals on Doane's Lake because the more I thought about it the more I felt we needed to decide internally what plan we are going to attack this thing on.

I have briefly discussed with Hansen, Downs, and Whitworth, and opinions are varied. I am preparing an outline of the issues, which I hope to have to you for review by Monday.

/jag

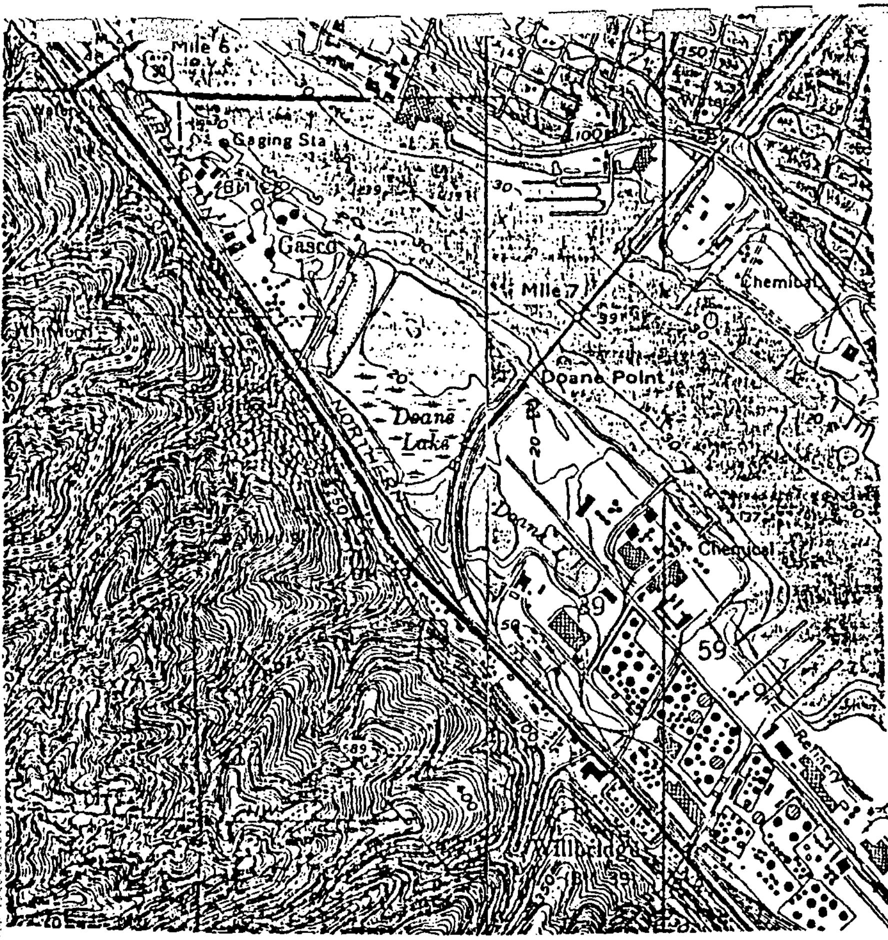
SUGGEST FOLLOW-UP

Doane Lake Area

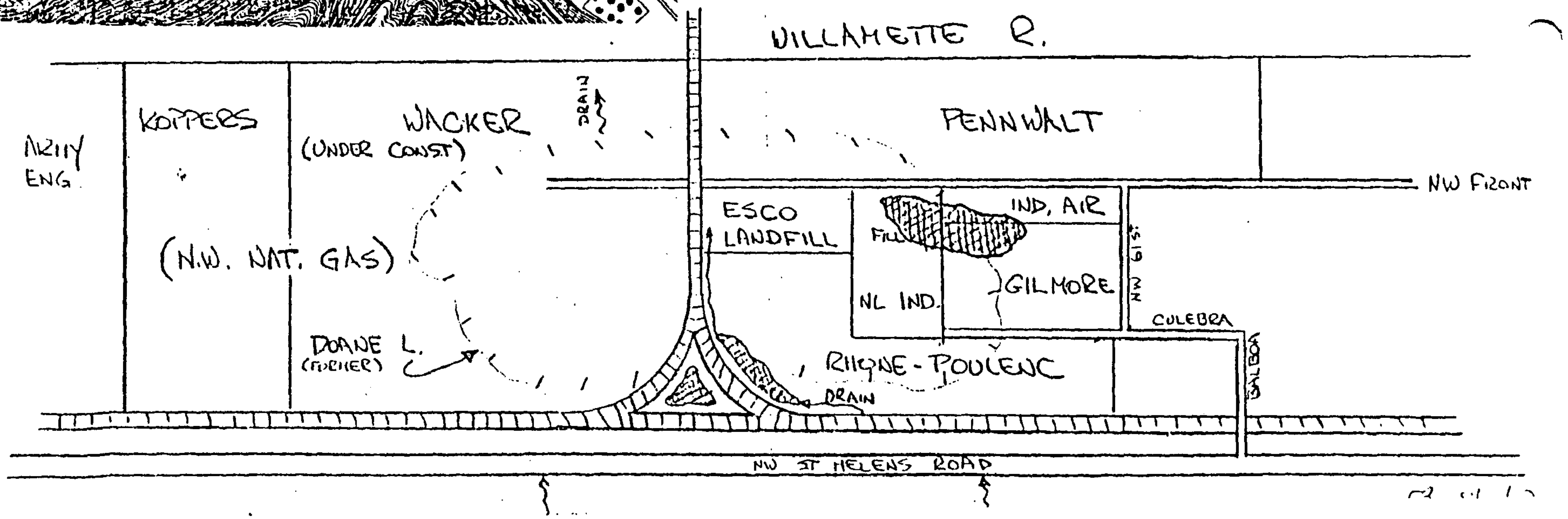
1. It was originally thought that this area consisted of two lakebeds, Doane (east) and Giles (west), created from the old Doane Lake as a result of constructing the railroad bed in 1910. The recognition of Giles Lake as a separate entity, however, never came into common usage and it is not generally referred to on maps. As such, we shall refer to this area simply as Doane Lake.

   This will also avoid confusion with the Guilds Lake area about two miles to the S.E.

2. Almost the entire lake has been covered with 5 - 10 ft. of fill. The area, however, is a natural sump and the water table is only about 5 ft. below the surface. During a wet winter it may surface in some areas. The old Doane Lake fluctuated about 5 ft. in depth.



DOANE LAKE AREA



INVENTORY-POSSIBLE SOURCES OF HAZARDOUS WASTE

****

EPA NUMBER: ____________

WASTE CHARACTERISTICS

IGNITABLE:				SOLID:	x
CORROSIVE:		RADIOACTIVE:		SEMI-SOLID:	X
REACTIVE:		INFECTIOUS:		LIQUID:	X
TOXIC:	X	OTHER:		GASEOUS:	

TOTAL WASTE QUANTITIES

VERY LARGE AMOUNT:	X		COUNTED:
LARGE AMOUNT:		AMOUNT OF WASTE	ESTIMATED:
SMALL AMOUNT:			REPORTED:
VERY SMALL AMOUNT:		TONS, YDS, BBL, ETC	MEASURED:

WASTE DISPOSAL

REGULATORY CONTROLS: *None*

WASTE TRANSPORTED TO SITES #:

WASTE DISPOSED INTO SEWER SYSTEM: *None*

WASTE DISPOSED IN EFFLUENT:

WASTE DISPOSED OF ON SITE: *All*

ON SITE DISPOSAL

INCINERATION:		LAND SPREADING:	
SURFACE STORAGE:	X	BURIAL:	X
WELL INJECTION:		OTHER:	

SITE CONDITIONS

GEOLOGIC SETTING

Fill over old lake bed

HYDROLOGIC CONDITIONS

DISTANCE OF LAKE OR MARINE WATER:

DISTANCE TO SURFACE STREAM: *Adjacent to Willamette River*

DEPTH TO GROUNDWATER: *5 to 10 feet*

DISTANCE TO WELLS OR SPRINGS:

DISTANCE TO NEAREST RESIDENCE:

USE OF SITE IF ABANDONED: *New plant site, empty lot*

PHYSICAL CONTROLS AT SITE

SOURCES OF INFORMATION: *Dick Gitschlag, Rhone-Poulenc, plant mgr. site visit 8/17/79.*

COMPILER: *Fred Bromfeld* DATE: *August 20, 1979*

HW
7.20

INVENTORY-POSSIBLE SOURCES OF HAZARDOUS WASTE

EPA NUMBER: ______ NPDES#: ______
SIC CODE BEG: ______ SIC CODE END: ______ BASIN CODE: ______
STATE: *Oregon* COUNTY: *Multnomah* CO CODE: ______

NAME: *Northwest Natural Gas*
OWNER:
ADDRESS: *Wacker and Koppers property* ZIP:
CONTACT: Duane Foley PHONE: 226-4211

LOCATION: *Portland, Oregon (see map attached)*
TOWNSHIP: *1N* RANGE: *1E* SECTION: *13*
USGS MAP NAME: *Linnton, Oregon*

BUSINESS TYPE

Mfg oil *gas from petroleum* ended '50s. - Now storage facilities

WASTE TYPES

Tars, napthalenes

DISPOSAL ACTIVITIES

On-site fill

PERIOD OF OPERATION: *1880's - 1950's*

HISTORY OF SITE OR PLANT OPERATION

The site covered what is now Wacker and Koppers. The plant manufactured oil *gas by* the *~~cracking petroleum~~ in brick retorts.* Heat obtained by burning oil in same retort *There was a benzene plant on the present Koppers area.*

Ref. I.E.C. 21, 104 (1929)

DETAILS OF WASTE CHARACTERISTICS, VOLUMES AND DISPOSAL OPERATION

Tar bottoms were disposed on-site including filling of Doane Lake. The more liquid material was ponded. It is believed (R. Gitschlag) that there may be 10 to 20 feet of tar over a good deal of the site that has been covered by about 10 feet of fill. A pipe draining the Wacker property (to river just west of RR bridge) shows an oil sheen.

SIC CODES

Koppers021885

EPA

POTENTIAL HAZARDOUS WASTE SITE PRELIMINARY ASSESSMENT

PART 3 - DESCRIPTION OF HAZARDOUS CONDITIONS AND INCIDENTS

I. IDENTIFICATION	
01 STATE	02 SITE NUMBER

II. HAZARDOUS CONDITIONS AND INCIDENTS

01 ☐ A. GROUNDWATER CONTAMINATION
02 ☐ OBSERVED (DATE: ________) ☐ POTENTIAL ☐ ALLEGED
03 POPULATION POTENTIALLY AFFECTED: ________
04 NARRATIVE DESCRIPTION

01 ☐ B. SURFACE WATER CONTAMINATION
02 ☐ OBSERVED (DATE: ________) ☐ POTENTIAL ☐ ALLEGED
03 POPULATION POTENTIALLY AFFECTED: ________
04 NARRATIVE DESCRIPTION

01 ☐ C. CONTAMINATION OF AIR
02 ☐ OBSERVED (DATE: ________) ☐ POTENTIAL ☐ ALLEGED
03 POPULATION POTENTIALLY AFFECTED: ________
04 NARRATIVE DESCRIPTION

01 ☐ D. FIRE/EXPLOSIVE CONDITIONS
02 ☐ OBSERVED (DATE: ________) ☐ POTENTIAL ☐ ALLEGED
03 POPULATION POTENTIALLY AFFECTED: ________
04 NARRATIVE DESCRIPTION

01 ☐ E. DIRECT CONTACT
02 ☐ OBSERVED (DATE: ________) ☐ POTENTIAL ☐ ALLEGED
03 POPULATION POTENTIALLY AFFECTED: ________
04 NARRATIVE DESCRIPTION

01 ☐ F. CONTAMINATION OF SOIL
02 ☐ OBSERVED (DATE: ________) ☐ POTENTIAL ☐ ALLEGED
03 AREA POTENTIALLY AFFECTED: ________ (Acres)
04 NARRATIVE DESCRIPTION

01 ☐ G. DRINKING WATER CONTAMINATION
02 ☐ OBSERVED (DATE: ________) ☐ POTENTIAL ☐ ALLEGED
03 POPULATION POTENTIALLY AFFECTED: ________
04 NARRATIVE DESCRIPTION

01 ☐ H. WORKER EXPOSURE/INJURY
02 ☐ OBSERVED (DATE: ________) ☐ POTENTIAL ☐ ALLEGED
03 WORKERS POTENTIALLY AFFECTED: ________
04 NARRATIVE DESCRIPTION

01 ☐ I. POPULATION EXPOSURE/INJURY
02 ☐ OBSERVED (DATE: ________) ☐ POTENTIAL ☐ ALLEGED
03 POPULATION POTENTIALLY AFFECTED: ________
04 NARRATIVE DESCRIPTION

EPA FORM 2070-12 (7-81)

POTENTIAL HAZARDOUS WASTE SITE
PRELIMINARY ASSESSMENT
PART 3 - DESCRIPTION OF HAZARDOUS CONDITIONS AND INCIDENTS

I. IDENTIFICATION	
01 STATE	02 SITE NUMBER

II. HAZARDOUS CONDITIONS AND INCIDENTS

01 ☐ A. GROUNDWATER CONTAMINATION — 02 ☐ OBSERVED (DATE: ________) ☐ POTENTIAL ☐ ALLEGED
03 POPULATION POTENTIALLY AFFECTED: ________ 04 NARRATIVE DESCRIPTION

01 ☐ B. SURFACE WATER CONTAMINATION — 02 ☐ OBSERVED (DATE: ________) ☐ POTENTIAL ☐ ALLEGED
03 POPULATION POTENTIALLY AFFECTED: ________ 04 NARRATIVE DESCRIPTION

01 ☐ C. CONTAMINATION OF AIR — 02 ☐ OBSERVED (DATE: ________) ☐ POTENTIAL ☐ ALLEGED
03 POPULATION POTENTIALLY AFFECTED: ________ 04 NARRATIVE DESCRIPTION

01 ☐ D. FIRE/EXPLOSIVE CONDITIONS — 02 ☐ OBSERVED (DATE: ________) ☐ POTENTIAL ☐ ALLEGED
03 POPULATION POTENTIALLY AFFECTED: ________ 04 NARRATIVE DESCRIPTION

01 ☐ E. DIRECT CONTACT — 02 ☐ OBSERVED (DATE: ________) ☐ POTENTIAL ☐ ALLEGED
03 POPULATION POTENTIALLY AFFECTED: ________ 04 NARRATIVE DESCRIPTION

01 ☐ F. CONTAMINATION OF SOIL — 02 ☐ OBSERVED (DATE: ________) ☐ POTENTIAL ☐ ALLEGED
03 AREA POTENTIALLY AFFECTED: ________ (Acres) 04 NARRATIVE DESCRIPTION

01 ☐ G. DRINKING WATER CONTAMINATION — 02 ☐ OBSERVED (DATE: ________) ☐ POTENTIAL ☐ ALLEGED
03 POPULATION POTENTIALLY AFFECTED: ________ 04 NARRATIVE DESCRIPTION

01 ☐ H. WORKER EXPOSURE/INJURY — 02 ☐ OBSERVED (DATE: ________) ☐ POTENTIAL ☐ ALLEGED
03 WORKERS POTENTIALLY AFFECTED: ________ 04 NARRATIVE DESCRIPTION

01 ☐ I. POPULATION EXPOSURE/INJURY — 02 ☐ OBSERVED (DATE: ________) ☐ POTENTIAL ☐ ALLEGED
03 POPULATION POTENTIALLY AFFECTED: ________ 04 NARRATIVE DESCRIPTION

EPA

POTENTIAL HAZARDOUS WASTE SITE PRELIMINARY ASSESSMENT
PART 2 - WASTE INFORMATION

I. IDENTIFICATION	
01 STATE	02 SITE NUMBER

II. WASTE STATES, QUANTITIES, AND CHARACTERISTICS

01 PHYSICAL STATES *(Check all that apply)*

- ☐ A. SOLID
- ☐ B. POWDER, FINES
- ☐ C. SLUDGE
- ☐ D. OTHER ________ *(Specify)*
- ☐ E. SLURRY
- ☐ F. LIQUID
- ☐ G. GAS

02 WASTE QUANTITY AT SITE *(Measures of waste quantities must be independent)*

- TONS ________
- CUBIC YARDS ________
- NO. OF DRUMS ________

03 WASTE CHARACTERISTICS *(Check all that apply)*

- ☐ A. TOXIC
- ☐ B. CORROSIVE
- ☐ C. RADIOACTIVE
- ☐ D. PERSISTENT
- ☐ E. SOLUBLE
- ☐ F. INFECTIOUS
- ☐ G. FLAMMABLE
- ☐ H. IGNITABLE
- ☐ I. HIGHLY VOLATILE
- ☐ J. EXPLOSIVE
- ☐ K. REACTIVE
- ☐ L. INCOMPATIBLE
- ☐ M. NOT APPLICABLE

III. WASTE TYPE

CATEGORY	SUBSTANCE NAME	01 GROSS AMOUNT	02 UNIT OF MEASURE	03 COMMENTS
SLU	SLUDGE			
OLW	OILY WASTE			
SOL	SOLVENTS			
PSD	PESTICIDES			
OCC	OTHER ORGANIC CHEMICALS			
IOC	INORGANIC CHEMICALS			
ACD	ACIDS			
BAS	BASES			
MES	HEAVY METALS			

IV. HAZARDOUS SUBSTANCES *(See Appendix for most frequently cited CAS Numbers)*

01 CATEGORY	02 SUBSTANCE NAME	03 CAS NUMBER	04 STORAGE/DISPOSAL METHOD	05 CONCENTRATION	06 MEASURE OF CONCENTRATION

V. FEEDSTOCKS *(See Appendix for CAS Numbers)*

CATEGORY	01 FEEDSTOCK NAME	02 CAS NUMBER	CATEGORY	01 FEEDSTOCK NAME	02 CAS NUMBER
FDS			FDS		
FDS			FDS		
FDS			FDS		
FDS			FDS		

VI. SOURCES OF INFORMATION *(Cite specific references, e.g., state files, sample analysis, reports)*

SITE VISIT; INTERVIEW WITH BILL GIBBS; DEQ FILES, NW NATURAL GAS FILES.

EPA

POTENTIAL HAZARDOUS WASTE SITE
PRELIMINARY ASSESSMENT
PART 2 - WASTE INFORMATION

I. IDENTIFICATION	
01 STATE	02 SITE NUMBER

II. WASTE STATES, QUANTITIES, AND CHARACTERISTICS

01 PHYSICAL STATES *(Check all that apply)*

- ☐ A. SOLID
- ☐ B. POWDER, FINES
- ☐ C. SLUDGE
- ☐ D. OTHER ______ *(Specify)*
- ☐ E. SLURRY
- ☐ F. LIQUID
- ☐ G. GAS

02 WASTE QUANTITY AT SITE *(Measures of waste quantities must be independent)*

TONS ______

CUBIC YARDS ______

NO. OF DRUMS ______

03 WASTE CHARACTERISTICS *(Check all that apply)*

- ☐ A. TOXIC
- ☐ B. CORROSIVE
- ☐ C. RADIOACTIVE
- ☐ D. PERSISTENT
- ☐ E. SOLUBLE
- ☐ F. INFECTIOUS
- ☐ G. FLAMMABLE
- ☐ H. IGNITABLE
- ☐ I. HIGHLY VOLATILE
- ☐ J. EXPLOSIVE
- ☐ K. REACTIVE
- ☐ L. INCOMPATIBLE
- ☐ M. NOT APPLICABLE

III. WASTE TYPE

CATEGORY	SUBSTANCE NAME	01 GROSS AMOUNT	02 UNIT OF MEASURE	03 COMMENTS
SLU	SLUDGE			
OLW	OILY WASTE			
SOL	SOLVENTS			
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OCC	OTHER ORGANIC CHEMICALS			
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BAS	BASES			
MES	HEAVY METALS			

IV. HAZARDOUS SUBSTANCES *(See Appendix for most frequently cited CAS Numbers)*

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CATEGORY	01 FEEDSTOCK NAME	02 CAS NUMBER	CATEGORY	01 FEEDSTOCK NAME	02 CAS NUMBER
FDS			FDS		
FDS			FDS		
FDS			FDS		
FDS			FDS		

VI. SOURCES OF INFORMATION *(Cite specific references, e.g., state files, sample analysis, reports)*

SITE VISIT; INTERVIEW WITH BILL GIBBS; DEQ FILES, NW NATURAL GAS FILES.

Speed Letter 44-90

Environmental Quality

GrayLine SNAP-A-WAY FORM

RECEIVED OCT 17 1984 NORTHWEST REGION

Speed Letter

To CHG NWR

From [illegible] HQ

CHG

Subject Northwest Natural Gas

MESSAGE

Did you want to update status before I send this to EPA?

Date 10-17-84 Signed [illegible]

REPLY

Date Signed

WilsonJones

GRAYLINE FORM 44-902 3-PART

PRINTED IN U.S.A.

RECIPIENT—RETAIN WHITE COPY. RETURN PINK COPY

283

STATE OF OREGON

INTEROFFICE MEMO

TO: Gary Calaba

DATE. August 9, 1984

FROM: CHGray CHG

SUBJECT: HW - Northwest Natural Gas
Preliminary Assessment
Multnomah County

The old Portland Gas & Coke Company produced oil and gas by gasification of oil with steam. The tar bottoms were disposed on-site. This operation started sometime in the 1880's and terminated in 1956 when they converted to importing liquified natural gas.

The tar bottoms are covered with at least 10 feet of soil cover. Exact locations of disposal are unknown. The site is next to the Willamette River. The shallow alluvial aquifer (approximately 10 feet deep) discharges to the Willamette River.

The Wacker Siltronics plant was built on top of part of the fill. During excavation for the plant site, oil sheen were encountered.

The presence of the tar bottoms due to their location and age pose a low threat to the environment. I do not feel any further investigation is warranted.

Please note letter from Northwest Natural Gas regarding their knowledge of the site. Their NPDES permit issued in 1974 has required oil and grease sampling from the stormwater pond. Up until 1981 it was weekly and was changed to monthly. They have consistently operated within those oil and grease effluent limitations.

/emc

81-1 -1387

EPA

POTENTIAL HAZARDOUS WASTE SITE
PRELIMINARY ASSESSMENT
PART 3 - DESCRIPTION OF HAZARDOUS CONDITIONS AND INCIDENTS

I. IDENTIFICATION	
01 STATE	02 SITE NUMBER

II. HAZARDOUS CONDITIONS AND INCIDENTS

01 ☐ A. GROUNDWATER CONTAMINATION — 02 ☐ OBSERVED (DATE: ________) ☐ POTENTIAL ☐ ALLEGED
03 POPULATION POTENTIALLY AFFECTED: ________ 04 NARRATIVE DESCRIPTION

01 ☐ B. SURFACE WATER CONTAMINATION — 02 ☐ OBSERVED (DATE: ________) ☐ POTENTIAL ☐ ALLEGED
03 POPULATION POTENTIALLY AFFECTED: ________ 04 NARRATIVE DESCRIPTION

01 ☐ C. CONTAMINATION OF AIR — 02 ☐ OBSERVED (DATE: ________) ☑ POTENTIAL ☐ ALLEGED
03 POPULATION POTENTIALLY AFFECTED: ________ 04 NARRATIVE DESCRIPTION

01 ☐ D. FIRE/EXPLOSIVE CONDITIONS — 02 ☐ OBSERVED (DATE: ________) ☐ POTENTIAL ☐ ALLEGED
03 POPULATION POTENTIALLY AFFECTED: ________ 04 NARRATIVE DESCRIPTION

NA

01 ☐ E. DIRECT CONTACT — 02 ☐ OBSERVED (DATE: ________) ☐ POTENTIAL ☐ ALLEGED
03 POPULATION POTENTIALLY AFFECTED: ________ 04 NARRATIVE DESCRIPTION

01 ☐ F. CONTAMINATION OF SOIL — 02 ☐ OBSERVED (DATE: ________) ☐ POTENTIAL ☐ ALLEGED
03 AREA POTENTIALLY AFFECTED: ________ (Acres) 04 NARRATIVE DESCRIPTION

01 ☐ G. DRINKING WATER CONTAMINATION — 02 ☐ OBSERVED (DATE: ________) ☐ POTENTIAL ☐ ALLEGED
03 POPULATION POTENTIALLY AFFECTED: ________ 04 NARRATIVE DESCRIPTION

01 ☐ H. WORKER EXPOSURE/INJURY — 02 ☐ OBSERVED (DATE: ________) ☐ POTENTIAL ☐ ALLEGED
03 WORKERS POTENTIALLY AFFECTED: ________ 04 NARRATIVE DESCRIPTION

01 ☐ I. POPULATION EXPOSURE/INJURY — 02 ☐ OBSERVED (DATE: ________) ☐ POTENTIAL ☐ ALLEGED
03 POPULATION POTENTIALLY AFFECTED: ________ 04 NARRATIVE DESCRIPTION

Mr. Charles H. Gray
August 2, 1984
Page 2

that pile, with large amounts of overburden from the neighboring Rivergate Rock facility, was mixed with the ponded tar. After covering with additional overburden the property was graded level.

With regard to your question on water quality, we have monitored effluent from our holding-pond discharge to the Willamette River since 1975. The initial permit, NPDES #1964-J, was in effect until February 11, 1981. At that time, it was superseded by the less stringent NPDES General Permit #0100-J. This second permit expires on December 31, 1985.

Please call if you have any questions or need additional information.

Sincerely,

W. L. Gibbs, Manager
Engineering Department

WLG:lb
Encl.

cc: J. Van Bladeren
E. L. Bolin
D. L. Foley
R. W. Gullberg

NORTHWEST NATURAL GAS COMPANY

220 N.W. SECOND AVENUE PORTLAND, OREGON 97209

Dept. of Environmental Quality
RECEIVED
AUG 1984
NORTHWEST REGION

August 2, 1984

Mr. Charles H. Gray
Asst. Regional Manager, NW Region
Department of Environmental Quality
522 S.W. 5th AVe.
Portland, OR 97201

Dear Mr. Gray:

I am writing in response to your recent inquiry concerning operations at the former Portland Gas & Coke Company plant near Linnton, and activities following the plant's shutdown in the late 1950's. A flow diagram of the process is enclosed.

Two accumulations of process residue remained when PG&C stopped manufacturing gas. A spent oxide pile with a volume of approximately 41,000 cubic yards was near the north end of the property: a tar pond estimated to contain some 30,000 cubic yards was located farther south (upstream).

We have some qualitative data on file for these materials, but little quantitative information on specific chemical compounds.

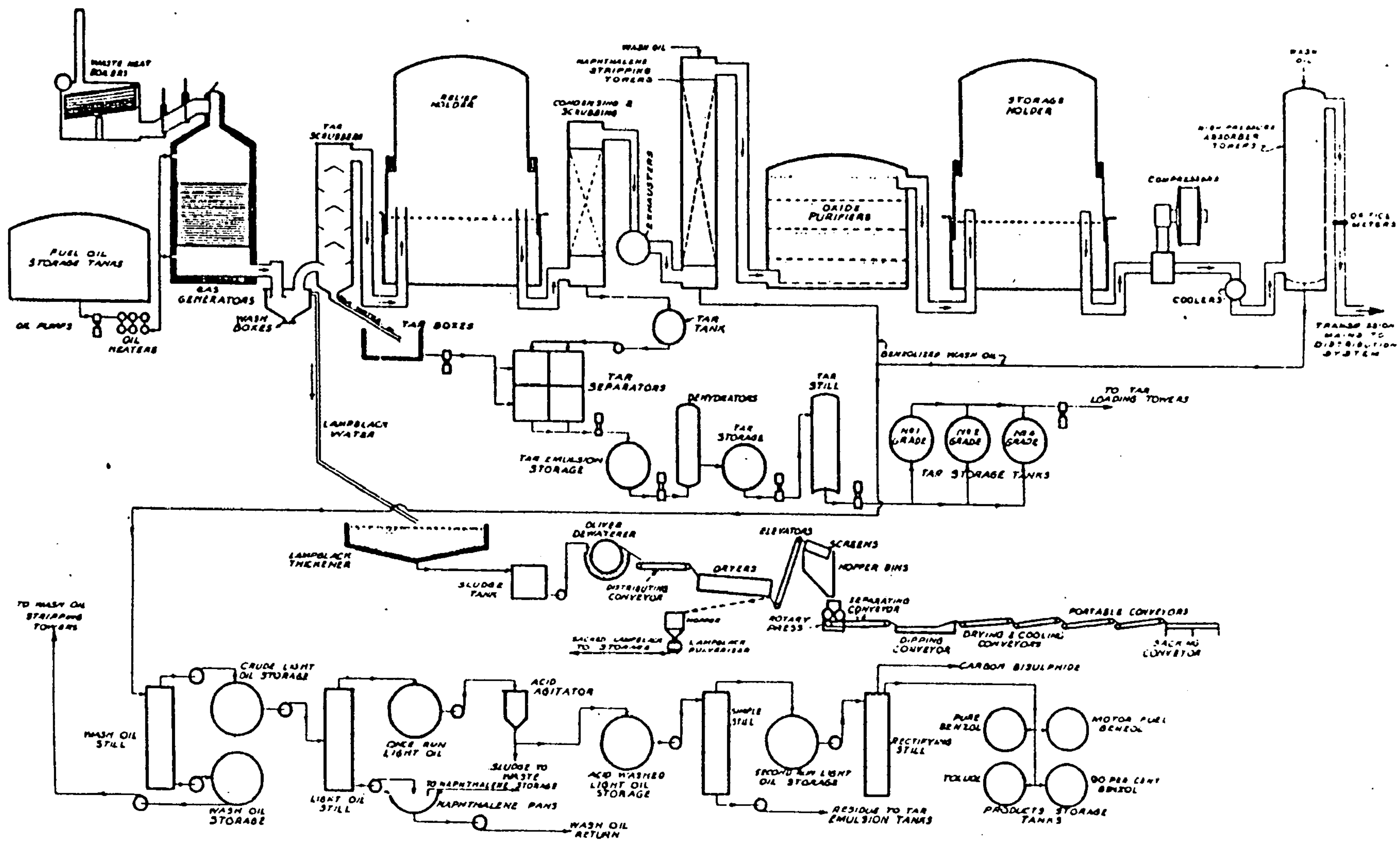
Most of the PG&C facilities were razed in the late 1960's, when construction of a liquefied natural gas (LNG) plant was begun. One portion of the existing small-tank farm was leased to Koppers: those tanks are still in use. Other, larger tanks near the riverbank were eventually reconditioned and are now leased to Pacific Northern Oil. Other tanks and metal structures were sold for scrap. Lampblack from Dorr thickeners was trucked offsite during demolition of the old gas plant. Its final disposition is not known.

In the early 1970's, all the remaining structures except the old Administration Building were demolished, and underground piping removed, in preparation for building a substitute natural gas (SNG) plant. That plant was never constructed, and the designated area is now used to store crushed rock.

As part of the general site cleanup associated with SNG preparations, the spent oxide pile was mainly hauled to the Scappoose landfill. The balance of

wlgdeq

wlgdeql



PORTLAND GAS & COKE COMPANY

GAS MANUFACTURING & BY PRODUCTS FLOW DIAGRAM

Koppers021894

HW 7.20

INVENTORY-POSSIBLE SOURCES OF HAZARDOUS WASTE

EPA NUMBER: ______ NPDES#: ______
SIC CODE BEG: ______ SIC CODE END: ______ BASIN CODE: ______
STATE: Oregon COUNTY: Multnomah CO CODE: ______

NAME: Northwest Natural Gas
OWNER:
ADDRESS: Wacker and Koppers property ZIP:
CONTACT: Duane Foley PHONE: 226-4211

LOCATION: Portland, Oregon (see map attached)
TOWNSHIP: 1N RANGE: 1E SECTION: 13
USGS MAP NAME: Linnton, Oregon

BUSINESS TYPE

Mfg oil gas from petroleum ended '50s, Now storage facilities

WASTE TYPES

Tars, napthalenes

DISPOSAL ACTIVITIES

On-site fill

PERIOD OF OPERATION: 1880's - 1950's

HISTORY OF SITE OR PLANT OPERATION

The site covered what is now Wacker and Koppers. The plant manufactured oil gas by the ~~cracking petroleum~~ in brick retorts. There was a benzene plant on the present Koppers area.
Heat obtained by burning oil in same retort
Ref. I.E.C. 21, 1041 (1929)

DETAILS OF WASTE CHARACTERISTICS, VOLUMES AND DISPOSAL OPERATION

Tar bottoms were disposed on-site including filling of Doane Lake. The more liquid material was ponded. It is believed (R. Gitschlag) that there may be 10 to 20 f of tar over a good deal of the site that has been covered by about 10 feet of fill. A pipe draining the Wacker property (to river just west of RR bridge) shows an oil sheen.

SIC CODES

SUGGEST FOLLOW-UP

Doane Lake Area

1. It was originally thought that this area consisted of two lakebeds, Doane (east) and Giles (west), created from the old Doane Lake as a result of constructing the railroad bed in 1910. The recognition of Giles Lake as a separate entity, however, never came into common usage and it is not generally referred to on maps. As such, we shall refer to this area simply as Doane Lake.

   This will also avoid confusion with the Guilds Lake area about two miles to the S.E.

2. Almost the entire lake has been covered with 5 - 10 ft. of fill. The area, however, is a natural sump and the water table is only about 5 ft. below the surface. During a wet winter it may surface in some areas. The old Doane Lake fluctuated about 5 ft. in depth.

((Clean

STATE OF OREGON

DEPARTMENT OF ENVIRONMENTAL QUALITY — INTEROFFICE MEMO

TO: Governor Vic Atiyeh

DATE: June 19, 1985

FROM: Fred Hansen

SUBJECT: History of the Doane's Lake Industrial District (Wacker Siltronics Site)

BACKGROUND

The industrial portion of northwest Portland was once two lakes: Doane's Lake to the north, and Guild's Lake to the south. These areas have been filled with a mixture of dredge sands and muds from the Willamette River and industrial wastes. The area has been heavily industrialized for nearly the past 100 years. Activities now regulated by DEQ, including waste water discharges, surface and groundwater pollution problems, air pollution discharges, and landfilling of industrial solid and hazardous waste have all occurred in the area, prior to regulation. In addition, sediment from the Willamette could have concentrated the more toxic elements of the industrial discharges.

WACKER NEIGHBORHOOD

In 1976, Wacker Siltronic purchased 85 acres in the Doane's Lake District. The site is adjacent to the SP & S Railroad Bridge, and is bordered on the east by the Willamette River, west by Highway 30, and north by Kopper's and Northwest Natural Gas. Within 1/2 mile of the plant are various industrial plants, including Gould Battery, Pennwalt, Rhone-Poulenc, and an ESCO landfill. All of these have potential pollution problems associated with them.

KOPPER'S

Koppers constructed a plant to make coal tar pitch for the aluminum industry in 1966. This process ceased operation in 1973. Since then, the facility has been used for blending creosote and pentachlorophenol solutions.

NORTHWEST NATURAL GAS

This facility adjacent to Northwest St. Helens Road was a coal gasification plant which operated in the late 1800's. The bottoms from the manufacturing of oil gas were landfilled on site, on the Kopper's site and on the Wacker site. The plant closed in the 1950's.

PENNWALT

Pennwalt manufactures chlorine at its facility located between First Avenue and the Willamette River. The plant was built during World War II. The majority of discharges have been to the Willamette River. Discharges would have been caustic and acidic and included traces of some metals.

ESCO

ESCO has a landfill between Rhone-Poulenc and Gould where casting sands have been disposed of. These sands include some naturally-occurring radioactive isotopes, along with phenolic resins used as a binder. The concentration of naturally-occurring radioactive isotopes is below the state definition of radioactive materials.

GOULD BATTERY

Gould Battery presently owns a former battery manufacturing facility between Highway 30 and Front Avenue. The company purchased the property in 1979. About 10,000 tons of old battery casings remain on the property. The batteries contain lead oxide which can be both an air and water pollution problem. In 1980, the Gould battery site was listed as one of the two Oregon Superfund sites. An attempt to recycle the useful portions of the battery casings has failed, and EPA and the company are now working to reach agreement on a cleanup program.

RHONE-POULENC

Rhone-Poulenc owns and operates a pesticide company located adjacent to Northwest St. Helens Road. The company was earlier operated as Rhodia Chemical Company, and Chipman Chemical.

The groundwater around the plant is contaminated with pesticides. This contamination occurred over a long period of time due to product loss from spills and leaking tanks and lines.

The company has completed a very detailed, several year study of the groundwater in the area. Based on that information, the company is on a long-term cleanup program which requires pumping the groundwater from beneath the plant and treating it prior to discharge to the Willamette River.

SUMMARY

The Doane's Lake district is a very industrialized area with associated pollution problems. Until Wacker Siltronic and its consultants CH_2M Hill share their data on the soil analysis which prompted the delay of the poly plant with the Department, we are unable to know if the concentrations of chemicals in the soils are above what would be expected. All of the chemicals which are known to have been found in the testing to date can be associated with Wacker's neighboring industries.

STATE OF OREGON

DEPARTMENT OF ENVIRONMENTAL QUALITY — INTEROFFICE MEMO

TO: Fred Bolton
Larry Patterson
Glen Carter
Andy Schaedel
Rick Gates
Jan Whitworth
Neil Mullane

DATE: November 8, 1985

FROM: Janet A. Gillaspie

SUBJECT: Doane's Lake

We have received the groundwater monitoring reports from the wells Wacker Siltronics installed on their property to determine if past filling practices or pollution from neighbors was causing a problem on their property. The results are attached, along with a summary from Larry Patterson. Also attached is data from the adjacent Kopper's property.

We have scheduled a meeting for November 13, at 10:30 a.m. in room 4A to review these results and reach consensus on the next step. We will be also meeting with Pat Storm from EPA, Seattle's Superfund program the following day. Pat is the project manager for the adjacent Gould Battery Superfund cleanup. We need to reach consensus with EPA on the project also. The meeting with EPA is scheduled for the morning of November 14. Additional details will be forthcoming.

Should you have questions, or be unable to make the meeting, please call me at ext. 5292.

JAG:r
RR37
Attachment

Dept. of Environmental Quality

JA9

STATE OF OREGON

DEPARTMENT OF ENVIRONMENTAL QUALITY NORTHWEST REGION INTEROFFICE MEMO

TO: Janet Gillaspie, NWR

DATE: October 22, 1985

FROM: Larry Patterson, WQ

SUBJECT: Doane Lake

On October 14, 1985, Jim Ellis of Wacker Siltronic delivered a copy of the groundwater monitoring data from their proposed construction site. Copies of the report were given to NWR, DEQ - Lab, and EPA - Region X for comment.

The data indicated that: 1) metal levels are all within drinking water standards, 2) chlorophenols are nondetectable, and 3) coal tar constituents are present in low concentrations. The soils data which was submitted earlier in the year tends to support the findings of the groundwater data.

The materials detected in the soil and groundwater at the Wacker site most likely are associated with past activities at the Koppers/N.W. Natural Gas site. The coal tar constituents are very similar to the materials found at the Pacific Power & Light Astoria Service Center. There are numerous environmental similarities between the sites at Astoria and Doane Lake.

The feasibility report prepared by Camp Dresser & McKee Inc., for PP&L was a good report. It presents a detailed picture of the Astoria site, the environmental contaminants present, the various remedial action alternatives, and the associated risks. It is suggested that the owner(s) of the Koppers/N.W. Natural Gas property be required to conduct a similar study. To provide a complete picture, it may be necessary to install additional groundwater monitoring devices on the west end (downstream side) of Walker Siltronic's property. This could most likely be done without interfering with any of Walker's proposed construction activities.

Upon receipt of comments from EPA and other DEQ personnel, we should get together to formulate a response to Wacker.

LDPHh
WH462

JAG

Wacker Siltronic Corporation
P O Box 03180
Portland, OR 97203
7200 N.W. Front Ave
Portland, OR 97210
Phone (503) 243-2020
TWX 910-464-4777
FAX 503-226-0052

State of Oregon
DEPARTMENT OF ENVIRONMENTAL QUALITY
RECEIVED
OCT 1
WATER QUALITY CONTROL

October 10, 1985

Mr. Larry Patterson
Industrial Wastewater Engineer
Department of Environmental Quality
Post Office Box 1760
Portland, Oregon 97207

Dear Larry:

Subject: Proposed Polysilicon Site - Groundwater Analyses

As part of an on-going site investigation, Wacker Siltronic Corporation arranged for CH2M-Hill and a drilling subcontractor, Geo Tech Explorations Inc. to install seven (7) monitoring wells on the subject site during April, 1985, (see attached Figure 1 for well locations). Soil samples, approximately 18 inches in length were removed from each 5-foot increment of penetration during the process of drilling the wells. All borings, 6 1/4 inches in diameter, were drilled to a depth of approximately 35-40 feet, and developed as ground water monitoring wells.

During April, a total of nine (9) soil samples were selected and analyzed to determine if chemicals of the following categories were in the soil:

a.) Polyaromatic hydrocarbons,
b.) Heavy metals,
c.) Selected pesticides, and,
d.) Petroleum products

The results of these soil analyses were submitted to the Department of Environmental Quality during June, 1985.

During July 31 and August 1, 1985 these same seven (7) monitoring wells were purged and sampled in accordance with EPA-approved procedures. Resulting groundwater samples were submitted to Laucks Testing Laboratories, Inc., Seattle, on August 1 to be analyzed for priority pollutants in accordance with Test Methods for Evaluating Solid Waste, (SW-846), U.S.E.P.A., 1982, Methods 8240 (volatile organics), 8270 (semi-volatile extractables), 8080, (pesticides and PCB's), 9010 (cyanide), and the 7000 series (metals analysis).

Phenol analyses were conducted in accordance with Method 4202, Methods for Chemical Analysis of Water & Wastes, U.S.E.P.A., March 1979.

A summary of these laboratory results is presented in the attached Table 1. Wacker Siltronic has reviewed these data carefully and has concluded that the low level of critical contaminants pose no threat to the environment and to human health and safety. We request that you concur in our view that there is no environmental or health threat so that we can resume design of construction projects for this site with assurance that we will have no interference to the future operations attributable to the existing environmental site conditions.

After you have had an opportunity to review the enclosed summary we would like to discuss it with you.

Very truly yours,

WACKER SILTRONIC CORPORATION

James R. Ellis

James R. Ellis
Polysilicon Project Manager

JRE:ll

Enclosure

cc: Jim Disorbo
Jim Harper
John Pittman
File

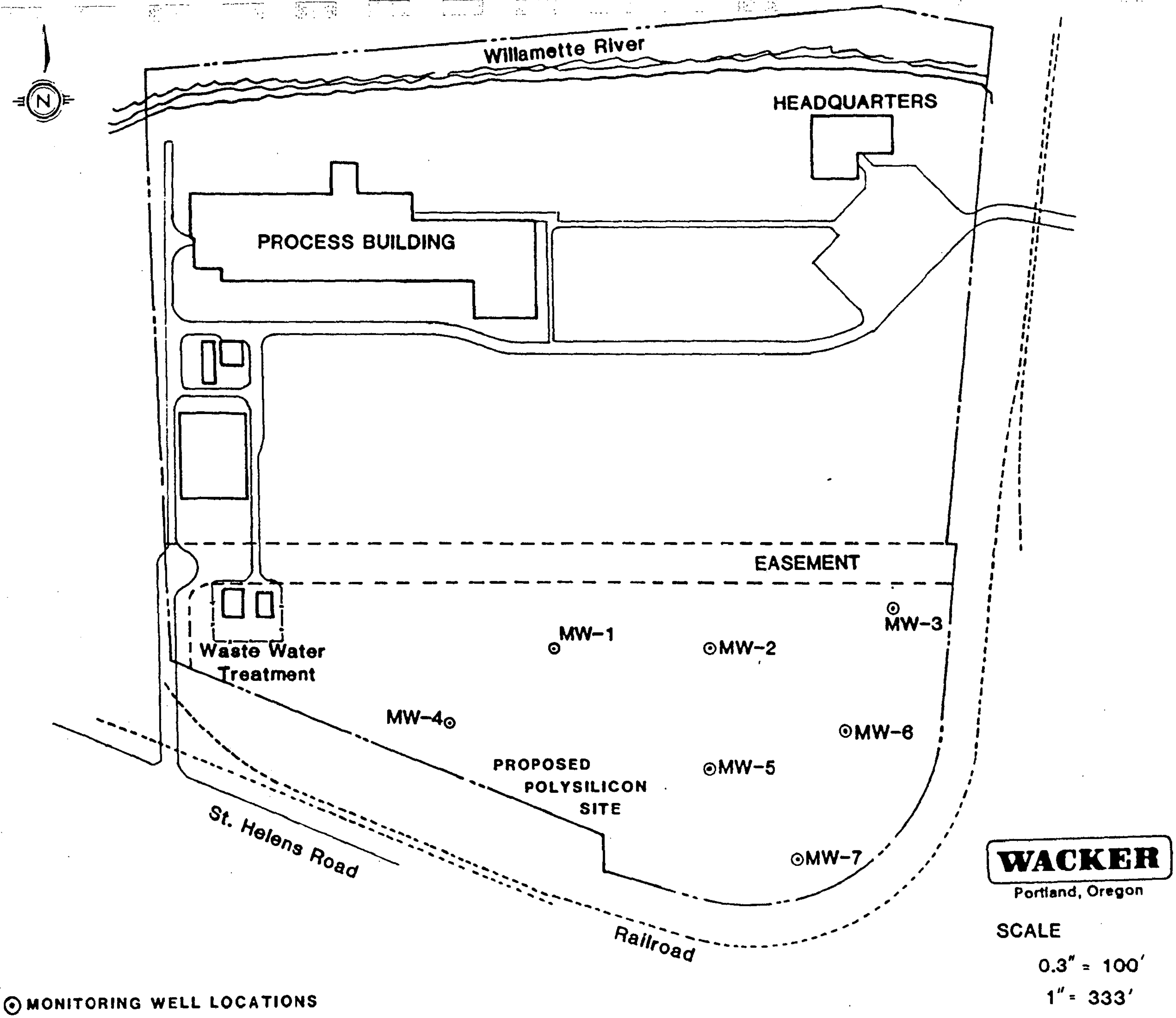


Figure 1 - MONITOR..G WELL LOCATIONS ON PR..OSED POLYSILICON SITE

Koppers021903

TABLE 1

Groundwater Analyses
Wacker Siltronic Corp.
Proposed Polysilicon Site
(Concentrations expressed in parts per million)

Inorganics	MW-1	MW-2	MW-3	MW-4	MW-5	MW-6	MW-7
Antimony	<.005	<.005	<.005	<.005	<.005	<.005	<.005
Arsenic	.005	<.005	.005	<.005	<.005	.010	<.005
Beryllium	<.001	<.001	<.001	<.001	<.001	<.001	<.001
Cadmium	.003	.002	.001	.003	.002	.002	<.001
Chromium	.010	.008	.005	.009	.006	.006	.004
Copper	.002	.007	.001	.002	.002	.001	.004
Lead	.052	.040	.025	.049	.028	.030	.020
Mercury	<.001	<.001	<.001	<.001	<.001	<.001	<.001
Nickel	.010	.007	.005	.011	.006	.006	.008
Selenium	<.005	<.005	<.005	<.005	<.005	<.005	<.005
Silver	<.001	<.001	<.001	<.001	<.001	<.001	.001
Thallium	<.005	<.005	<.005	<.005	<.005	<.005	<.005
Zinc	.026	.016	.017	.050	.011	.011	.047
Total Cyanide	.180	.058	.130	.930	.130	.040	.033
Total Phenol	.072	.013	.006	<.005	<.005	.030	<.005

Koppers021904

TABLE 1

Groundwater Analyses
Wacker Siltronic Corp.
Proposed Polysilicon Site
(Concentrations expressed in parts per million)

Volatile Organics (by GC/MS)	MW-1	MW-2	MW-3	MW-4	MW-5	MW-6	MW-7
Chloromethane	<.010	<.001	<.001	<.001	<.001	<.001	<.001
Bromomethane	<.010	<.001	<.001	<.001	<.001	<.001	<.001
Vinyl Chloride	<.010	<.001	<.001	<.001	<.001	<.001	<.001
Chloroethane	<.010	<.001	<.001	<.001	<.001	<.001	<.001
Methylene Chloride	.088	T	T	T	.021	T	T
Acrolein	<.100	<.001	<.010	<.010	<.010	<.010	<.010
Acetone	.120	<.001	<.001	.021	.049	<.001	<.001
Acrylonitrile	<.100	<.001	<.010	<.010	<.010	<.010	<.010
Carbon Disulfide	<.010	<.001	<.001	<.001	<.001	<.001	<.001
1,1-Dichloroethylene	<.010	<.001	<.001	<.001	<.001	<.001	<.001
1,1-Dichloroethane	<.010	<.001	<.001	<.001	<.001	<.001	<.001
trans-1,2-Dichloroethylene	<.010	<.001	<.001	<.001	<.001	<.001	<.001
Chloroform	<.010	<.001	<.001	<.001	<.001	<.001	<.001
2-Butanone	<.010	<.001	<.001	<.001	<.001	<.001	<.001
1,2-Dichloroethane	<.010	<.001	<.001	<.001	<.001	<.001	<.001
1,1,1-Trichloroethane	<.010	<.001	<.001	<.001	<.001	<.001	<.001
Vinyl Acetate	<.010	<.001	<.001	<.001	<.001	<.001	<.001
Bromodichloromethane	<.010	<.001	<.001	<.001	<.001	<.001	<.001
Carbon Tetrachloride	<.010	<.001	<.001	<.001	<.001	<.001	<.001
1,2-Dichloropropane	<.010	<.001	<.001	<.001	<.001	<.001	<.001
Trichloroethylene	<.010	<.001	<.001	<.001	<.001	<.001	<.001
Benzene	1.100	.100	.039	<.001	<.001	1.200	<.001
Chlorodibromomethane	<.010	<.001	<.001	<.001	<.001	<.001	<.001
1,1,2-Trichloroethane	<.010	<.001	<.001	<.001	<.001	<.001	<.001
2-Chloroethyl vinyl ether	<.010	<.001	<.001	<.001	<.001	<.001	<.001
Bromoform	<.010	<.001	<.001	<.001	<.001	<.001	<.001
4-Methyl-2-pentanone	<.010	<.001	<.001	<.001	<.001	<.001	<.001
2-Hexanone	<.010	<.001	<.001	<.001	<.001	<.001	<.001
1,1,2,2,-Tetrachloroethane	<.010	<.001	<.001	<.001	<.001	<.001	<.001

TABLE 1

Groundwater Analyses
Wacker Siltronic Corp.
Proposed Polysilicon Site
(Concentrations expressed in parts per million)

Volatile Organics (Cont.)	MW-1	MW-2	MW-3	MW-4	MW-5	MW-66	MW-7
Tetrachloroethylene	<.010	<.001	<.001	<.001	<.001	<.001	<.001
Toluene	<.010	<.001	<.001	<.001	<.001	<.027	<.001
Chlorobenzene	<.010	<.001	<.001	<.001	<.001	<.001	<.001
trans-1,3-Dichloropropene	<.010	<.001	<.001	<.001	<.001	<.001	<.001
Ethylbenzene	.410	<.036	<.001	T	<.001	.390	<.001
cis1,3-Dichloropropene	<.010	<.001	<.001	<.001	<.001	<.001	<.001
Styrene	<.010	<.001	<.001	<.001	<.001	<.001	<.001
Total Xylenes	1.200	.032	T	.015	<.001	.430	<.001

Koppers021906

TABLE 1

Groundwater Analyses
Wacker Siltronic Corp
Proposed Polysilicon Site
(Concentrations expressed in parts per million)

Extractables (by GC/MS)	MW-1	MW-2	MW-3	MW-4	MW-5	MW-6	MW-7
N-nitrosodimethylamine	<.001	<.001	<.001	<.001	<.001	<.001	<.001
Bis(2-chloroethyl)ether	<.001	<.001	<.001	<.001	<.001	<.001	<.001
2-Chlorophenol	<.001	<.001	<.001	<.001	<.001	<.001	<.001
Phenol	T	<.001	<.001	<.001	<.001	<.001	<.001
1,3-Dichlorobenzene	<.001	<.001	<.001	<.001	<.001	<.001	<.001
1,4-Dichlorobenzene	<.001	<.001	<.001	<.001	<.001	<.001	<.001
1,2-Dichlorobenzene	<.001	<.001	<.001	<.001	<.001	<.001	<.001
Bis(2-chloroisopropyl)ether	<.001	<.001	<.001	<.001	<.001	<.001	<.001
Hexachloroethane	<.001	<.001	<.001	<.001	<.001	<.001	<.001
N-nitroso-di-n-propylamine	<.001	<.001	<.001	<.001	<.001	<.001	<.001
Nitrobenzene	<.001	<.001	<.001	<.001	<.001	<.001	<.001
Isophorone	<.001	<.001	<.001	<.001	<.001	<.001	<.001
2-Nitrophenol	<.001	<.001	<.001	<.001	<.001	<.001	<.001
2,4-Dimethylphenol	.027	<.001	<.001	<.001	<.001	<.001	<.001
Bis(2-chloroethoxy)methane	<.001	<.001	<.001	<.001	<.001	<.001	<.001
2,4-Dichlorophenol	<.001	<.001	<.001	<.001	<.001	<.001	<.001
1,2,4-Trichlorobenzene	<.001	<.001	<.001	<.001	<.001	<.001	<.001
Naphthalene	<.001	1.900	.600	.350	.058	2.100	T
Hexachlorobutadiene	<.001	<.001	<.001	<.001	<.001	<.001	<.001
4-Chloro-m-cresol	<.001	<.001	<.001	<.001	<.001	<.001	<.001
Hexachlorocyclopentadiene	<.001	<.001	<.001	<.001	<.001	<.001	<.001
2,4,6-Trichlorophenol	<.001	<.001	<.001	<.001	<.001	<.001	<.001
2-Chloronaphthalene	<.001	<.001	<.001	<.001	<.001	<.001	<.001
Acenaphthylene	.088	.200	T	T	.031	.032	<.001
Dimethylphthalate	<.001	<.001	<.001	<.001	<.001	<.001	<.001
2,6-Dinitrotoluene	<.001	<.001	<.001	<.001	<.001	<.001	<.001
Acenaphthene	.270	.940	.086	.350	.054	.200	.019
2,4-Dinitrophenol	<.001	<.001	<.001	<.001	<.001	<.001	<.001

Koppers021907

TABLE 1

Groundwater Analyses
Wacker Siltronic Corp.
Proposed Polysilicon Site
(Concentrations expressed in parts per million)

Extractables, (Cont.)	MW-1	MW-2	MW-3	MW-4	MW-5	MW-6	MW-7
2,4-Dinitrotoluene	<.001	<.001	<.001	<.001	<.001	<.001	<.001
4-Nitrophenol	<.001	<.001	<.001	<.001	<.001	<.001	<.001
Fluorene	.095	.440	.013	.053	.012	.035	<.001
4-Chlorophenyl phenyl ether	<.001	<.001	<.001	<.001	<.001	<.001	<.001
Diethylphthalate	<.001	<.001	<.001	<.001	<.001	<.001	<.001
4,6-Dinitro-o-cresol	<.001	<.001	<.001	<.001	<.001	<.001	<.001
1,2-diphenylhydrazine	<.001	<.001	<.001	<.001	<.001	<.001	<.001
4-Bromophenyl phenyl ether	<.001	<.001	<.001	<.001	<.001	<.001	<.001
Hexachlorobenzene	<.001	<.001	<.001	<.001	<.001	<.001	<.001
Pentachlorophenol	<.001	<.001	<.001	<.001	<.001	<.001	<.001
Phenanthrene	.180	1.630	.013	.028	.021	.056	T
Anthracene	.039	.630	T	T	T	T	<.001
Dibutylphthalate	<.001	<.001	<.001	<.001	<.001	<.001	<.001
Fluoranthene	.072	1.300	T	.018	T	T	.023
Pyrene	.081	1.430	T	.014	.010	.010	.011
Benzidine	<.001	<.001	<.001	<.001	<.001	<.001	<.001
Butyl benzyl phthalate	<.001	<.001	<.001	<.001	<.001	<.001	<.001
Benzo(a)anthracene	.031	.480	T	T	T	T	.012
Chrysene	.036	.650	T	T	T	T	.015
3,3'-Dichlorobenzidine	<.001	<.001	<.001	<.001	<.001	<.001	<.001
Bis(2-ethylhexyl)phthalate	T	.024	T	.013	T	T	T
N-nitrosodiphenylamine	<.001	<.001	<.001	<.001	<.001	<.001	<.001
Di-n-octyl phthalate	T	<.001	T	T	T	<.001	T
Benzo(b)fluoranthene	.024	.400	<.001	T	T	T	T
Benzo(k)fluoranthene	T	.120	<.001	<.001	<.001	T	T
Benzo(a)pyrene	.040	.760	T	T	T	T	.010
Indeno(1,2,3-cd)pyrene	.020	.300	<.001	T	T	T	T
Dibenzo(ah)anthracene	<.001	T	<.001	<.001	<.001	<.001	<.001

Koppers021908

TABLE 1

Groundwater Analyses
Wacker Siltronic Corp.
Proposed Polysilicon Site
(Concentrations expressed in parts per million)

Extractables, (Cont.)	MW-1	MW-2	MW-3	MW-4	MW-5	MW-6	MW-7
Benzo(ghi)perylene	.025	.370	<.001	T	T	T	T
Aniline	<.001	<.001	<.001	<.001	<.001	<.001	<.001
Benzoic Acid	<.001	<.001	<.001	<.001	<.001	<.001	<.001
Benzyl Alcohol	<.001	<.001	<.001	<.001	<.001	<.001	<.001
4-Chloroaniline	<.001	<.001	<.001	<.001	<.001	<.001	<.001
Dibenzofuran	.077	.075	T	.088	T	.014	T
2-Methylnaphthalene	<.001	.260	.067	.019	.012	.041	<.001
2-Methylphenol	<.001	<.001	<.001	<.001	<.001	<.001	<.001
4-Methylphenol	<.001	<.001	<.001	<.001	<.001	<.001	<.001
2-Nitroaniline	<.001	<.001	<.001	<.001	<.001	<.001	<.001
3-Nitroaniline	<.001	<.001	<.001	<.001	<.001	<.001	<.001
4-Nitroaniline	<.001	<.001	<.001	<.001	<.001	<.001	<.001
2,4,5-Trichlorophenol	<.001	<.001	<.001	<.001	<.001	<.001	<.001

Koppers021909

TABLE 1

Groundwater Analyses
Wacker Siltronic Corp.
Proposed Polysilicon Site
(Concentrations expressed in parts per million)

Pesticides (by GC/ECD)	MW-1	MW-2	MW-3	MW-4	MW-5	MW-6	MW-7
alpha-BHC	<.0002	<.0002	<.00002	.00024	<.00002	.00006	<.00002
beta-BHC	<.0002	<.0002	<.00002	<.00002	<.00002	<.00002	<.00002
delta-BHC	<.0002	<.0002	<.00002	<.00002	<.00002	<.00002	<.00002
gamma-BHC (lindane)	<.0002	<.0002	<.00002	<.00002	<.00002	<.00002	<.00002
heptachlor	<.0002	<.0002	<.00002	<.00002	<.00002	<.00002	<.00002
aldrin	<.0002	<.0002	<.00002	<.00002	<.00002	<.00002	<.00002
heptachlor epoxide	<.0002	<.0002	<.00002	<.00002	<.00002	<.00002	<.00002
dieldrin	<.0002	<.0002	<.00002	<.00002	<.00002	<.00002	<.00002
4,4'-DDE	<.0002	<.0002	<.00002	<.00002	<.00002	<.00002	<.00002
4,4'-DDD	<.0004	<.0004	<.00004	<.00004	<.00004	<.00004	<.00004
endosulfan sulfate	<.0004	<.0004	<.00004	<.00004	<.00004	<.00004	<.00004
4,4'-DDT	<.0004	<.0004	<.00004	<.00004	<.00004	.00028	<.00004
chlordane	<.0004	<.0004	<.00004	<.00004	<.00004	<.00004	<.00004
alpha endosulfan	<.0004	<.0004	<.00004	<.00004	<.00004	<.00004	<.00004
beta endosulfan	<.0004	<.0004	<.00004	<.00004	<.00004	<.00004	<.00004
endrin	<.0004	<.0004	<.00004	<.00004	.00002	<.00004	<.00004
endrin aldehyde	<.0004	<.0004	<.00004	<.00004	<.00004	<.00004	<.00004
toxaphene	<.050	<.050	<.004	<.004	<.004	<.004	<.004
PCB 1016	<.010	<.010	<.001	<.001	<.001	<.001	<.001
PCB 1221	<.010	<.010	<.001	<.001	<.001	<.001	<.001
PCB 1232	<.010	<.010	<.001	<.001	<.001	<.001	<.001
PCB 1242	<.010	<.010	<.001	<.001	<.001	<.001	<.001
PCB 1248	<.010	<.010	<.001	<.001	<.001	<.001	<.001
PCB 1254	<.010	<.010	<.001	<.001	<.001	<.001	<.001
PCB 1260	<.010	<.010	<.001	<.001	<.001	<.001	<.001

Key

< indicates "less than"
Trace = 1-10 ug/L

Koppers021910

NW Natural Gas
~~Koppers~~

Pb 16 23
CN 19.4
Dimethylbenzene

Koppers — Wells
Pb
236, 22, 23, 47 12-19-84

1,2 Dimethylbenzene 2600, 3.4, 160

Pb, as, Cr. — EP Toxicity — CN

listed organic compounds

Enough wells to monitor GW gradient

10 ft - 100 ft

Soil cores while EP tox
Wells at various depths 10 - 40 ft

NW Natural Gas do they own all of Koppers

Check NW Nat Gas file for boom or slurry wall along river

Napthalene U 165
Chrysene U 050
Phenol U 188
Nitrobenzene U169 (I)(T)

101- 033 —

file WQ

cc: HW

CH8

NORTHWEST NATURAL GAS COMPANY

220 N.W. SECOND AVENUE PORTLAND, OREGON 97209

(503) 226-4211

Dept. of Environmental Quality
RECEIVED
AUG 8 1984
NORTHWEST REGION

August 2, 1984

Mr. Charles H. Gray
Asst. Regional Manager, NW Region
Department of Environmental Quality
522 S.W. 5th AVe.
Portland, OR 97201

Dear Mr. Gray:

I am writing in response to your recent inquiry concerning operations at the former Portland Gas & Coke Company plant near Linnton, and activities following the plant's shutdown in the late 1950's. A flow diagram of the process is enclosed.

Two accumulations of process residue remained when PG&C stopped manufacturing gas. A spent oxide pile with a volume of approximately 41,000 cubic yards was near the north end of the property: a tar pond estimated to contain some 30,000 cubic yards was located farther south (upstream).

We have some qualitative data on file for these materials, but little quantitative information on specific chemical compounds.

Most of the PG&C facilities were razed in the late 1960's, when construction of a liquefied natural gas (LNG) plant was begun. One portion of the existing small-tank farm was leased to Koppers: those tanks are still in use. Other, larger tanks near the riverbank were eventually reconditioned and are now leased to Pacific Northern Oil. Other tanks and metal structures were sold for scrap. Lampblack from Dorr thickeners was trucked offsite during demolition of the old gas plant. Its final disposition is not known.

In the early 1970's, all the remaining structures except the old Administration Building were demolished, and underground piping removed, in preparation for building a substitute natural gas (SNG) plant. That plant was never constructed, and the designated area is now used to store crushed rock.

As part of the general site cleanup associated with SNG preparations, the spent oxide pile was mainly hauled to the Scappoose landfill. The balance of

wlgdeq

that pile, with large amounts of overburden from the neighboring Rivergate Rock facility, was mixed with the ponded tar. After covering with additional overburden the property, was graded level.

With regard to your question on water quality, we have monitored effluent from our holding-pond discharge to the Willamette River since 1975. The initial permit, NPDES #1964-J, was in effect until February 11, 1981. At that time, it was superseded by the less stringent NPDES General Permit #0100-J. This second permit expires on December 31, 1985.

Please call if you have any questions or need additional information.

Sincerely,

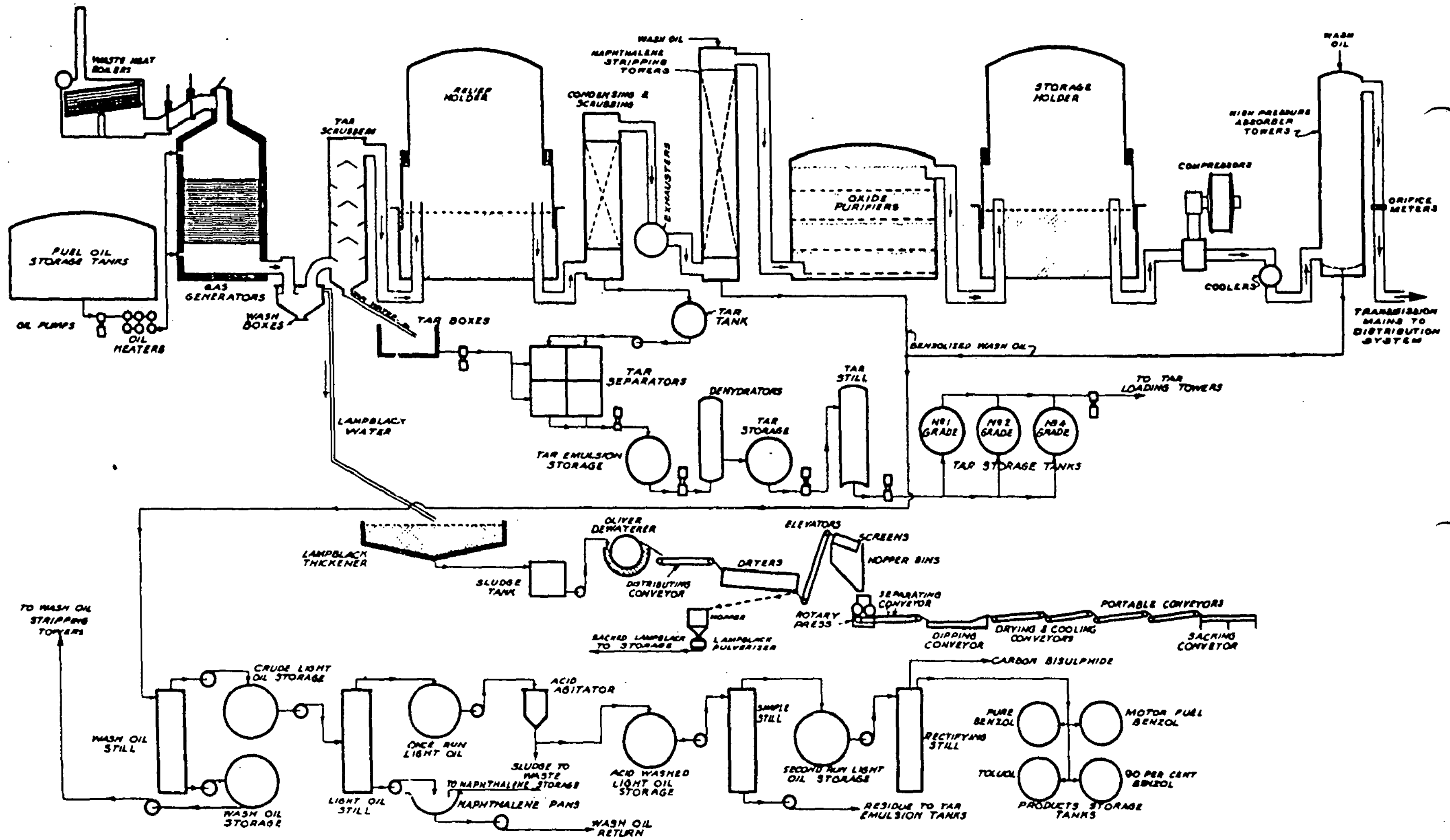
W. L. Gibbs

W. L. Gibbs, Manager
Engineering Department

WLG:lb
Encl.

cc: J. Van Bladeren
E. L. Bolin
D. L. Foley
R. W. Gullberg

wlgdeql



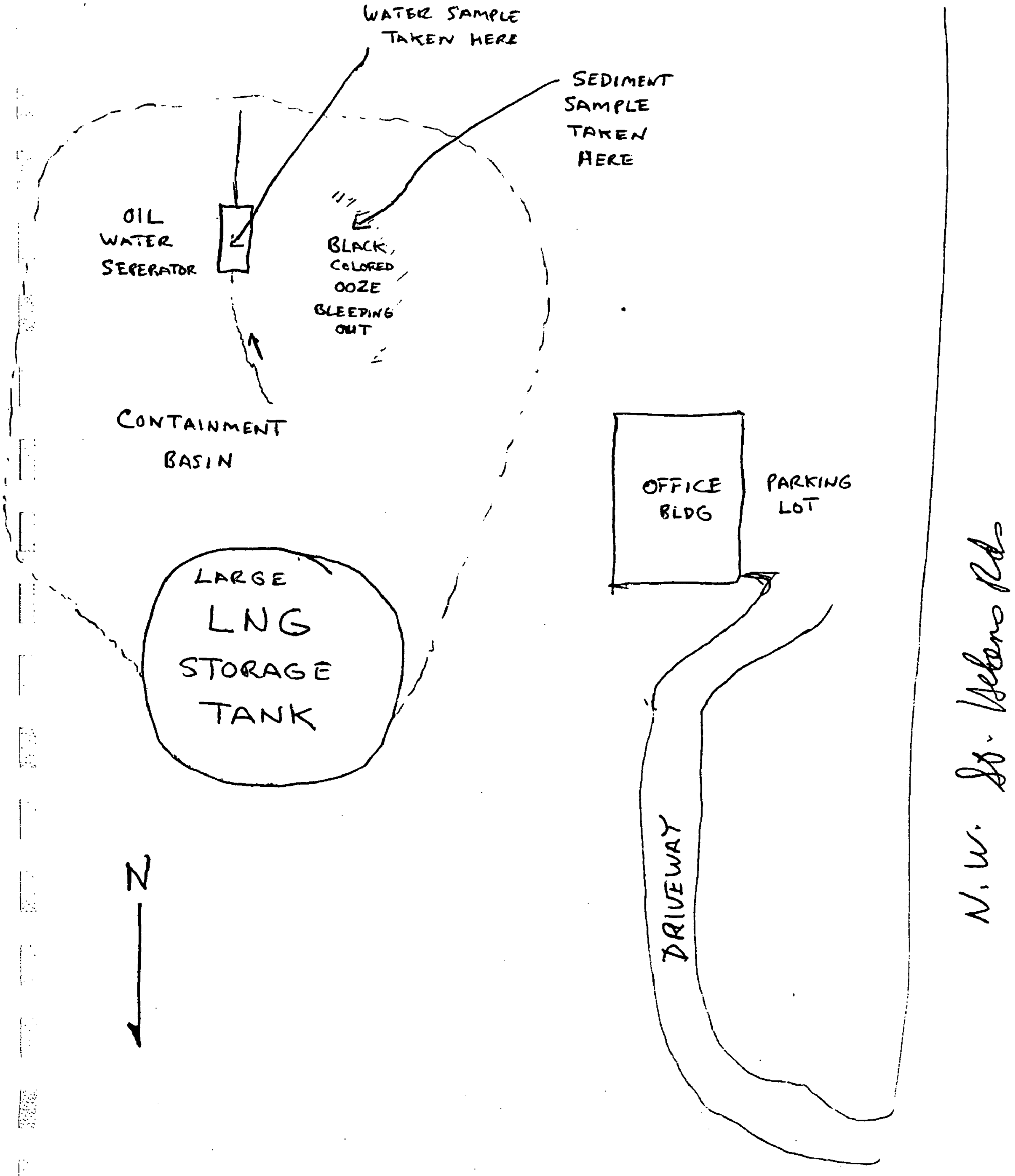
PORTLAND GAS & COKE COMPANY

GAS MANUFACTURING & BY PRODUCTS FLOW DIAGRAM

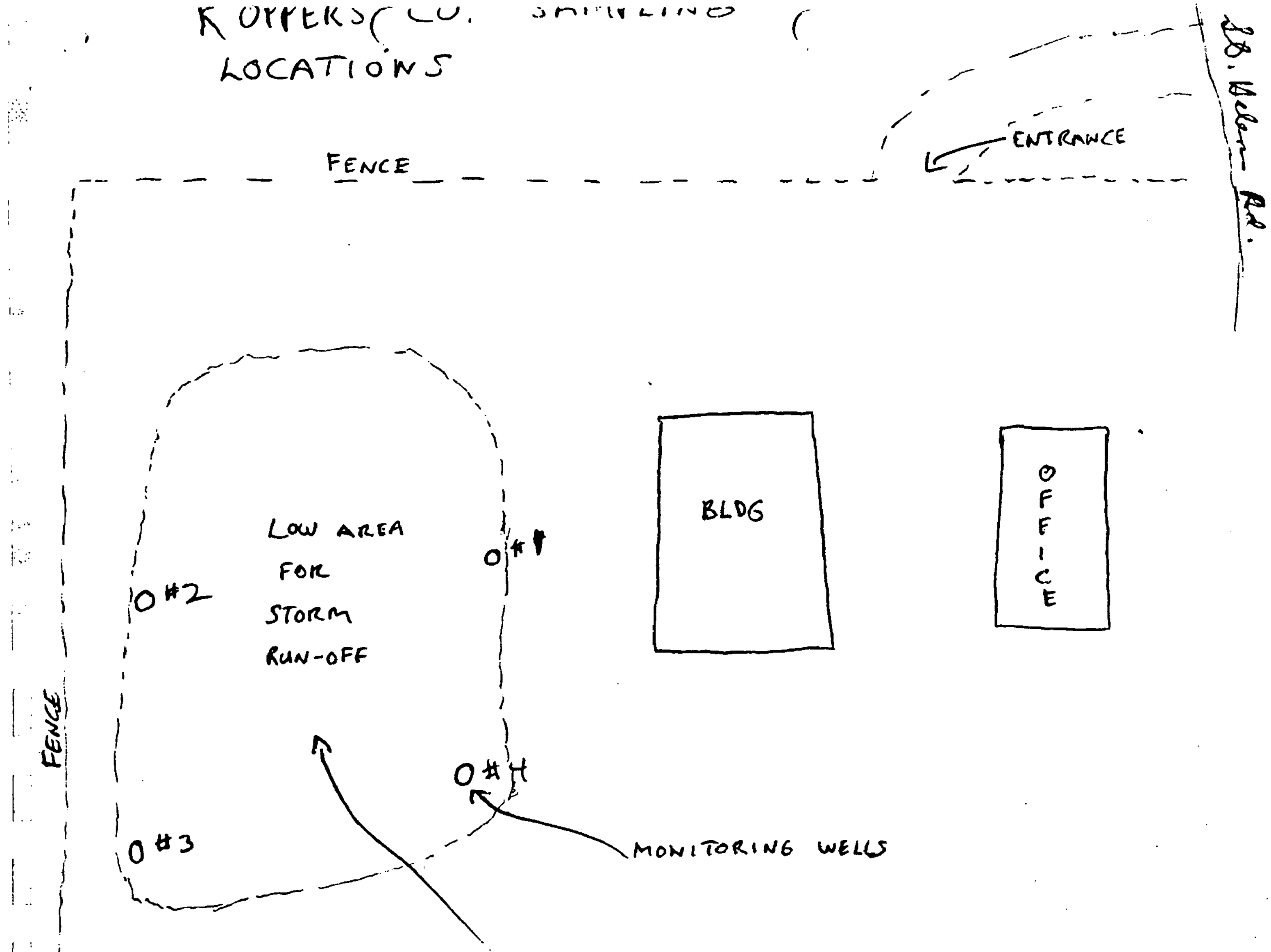
NOV 18, 1948

Koppers021915

NW NATURAL GAS CO SAMPLING
LOCATIONS



KOPPERS CO. SAMPLING
LOCATIONS



ALSO SOIL IS BLACK COLORED
FROM PAST PRACTICES – ONE
SOIL SAMPLE TAKEN HERE
ON 9-7-84

DEPARTMENT OF ENVIRONMENTAL QUALITY
~~Request for Analysis~~

Laboratory No. 84-0734

Location/Site: Koppers/N.W. Natural Gas   Date: 9-7-84   Date Received Lab: SEP 07 1984

Collected By: GAP CHG   Program: UIC 3249   Date Reported: OCT 31 1984

Purpose: Report Data To: ~~CHG~~

Comments:

* Basic (P) unpreserved; Nutrient (R) add H_2SO_4 in field; Metals (Tm) HNO_3 added in lab--don't rinse; Organic (X) lab prepared mason jar

Item No.	Sampling Point Description (include time)	*Sample Container (bottle) #'s: ~~Nutrients~~ Basic	Hg ~~DO~~ / ~~BOD~~ CN	Metals / Organic	Phenol / Organic	Test Required
1	Soil Sample 18" * below surface Koppers Storm Runoff Basin	Z845		Z847		Priority Pollutants
2	Pump Sump N.W. Natural Gas	B478	TM1002	TM1000	X571	"
			P381	X599	X608	
3	Sediment N.W. Natural Gas Containment Basin	S140				"
		X610				
4						
5						
6						

Dept. of Environmental Quality
RECEIVED
NOV 1 1984
NORTHWEST REGION

Laboratory comments *sample split - ½ placed in Z847 for organics 9-7-84

Parameters: As, Be, Se, Ag, Sb, Hg, Cd, Cr, Cu, Pb, Ni, Zn, %M, CN⁻, Phenolics, GC/MS purge, Acid, BN, PCB

Koppers021918

DEPARTMENT OF ENVIRONMENTAL QUALITY
Laboratory Data Sheet

Laboratory No: 84-0734
Program Code: 3249
Page: 1 of: 12
Analysis Completed: OCT 22 1984

Koppers/NW Natural Gas Gray

Test Results (All units in mg/l or ~~mg/kg~~ mg/kg dry as indicated)

Item No.	Soil/sed	Hg metals	Hg	As	Be	Se	Ag	Sb
1	Z845		0.23 mg/kg dry	4.2 mg/kg DRY	0.2 mg/kg	<0.25 mg/kg	<0.1 mg/kg	<0.5 mg/kg
2		TM1002 TM1000	<0.0005	0.005	<0.002	<0.005	<0.001	<0.01
3	S140		0.06 mg/kg dry	4.6 mg/kg DRY	0.3 mg/kg	<0.25 mg/kg	<0.1 mg/kg	<0.5 mg/kg

Item No.	Soil/sed	metals	Cd	Cr	Cu	Pb	Ni	Zn	%M
1	Z845		<0.44 mg/dry kg	19 mg/kg	17 mg/KG	4.4 mg/dry kg	21 mg/dry kg	59 mg/KG DRY	11.9
2		TM1000	<0.01	<0.1	<0.05	<0.1	0.06	0.10	
3	S140		<0.32 mg/dry kg	12.4 mg/kg	<0.05 mg/KG	16 mg/dry kg	26 mg/dry kg	62 mg/KG DRY	24.3

Comments:

Koppers021919

Laboratory No: 84-0734

Program Code: 3249

Page: 2 of: 12

DEPARTMENT OF ENVIRONMENTAL QUALITY
Laboratory Data Sheet

Analysis Completed: OCT 30 1984

Koppers/NW Natural Gas

Item No.	Test Results (All units in mg/l or ug/m^3)											
	Soil/Sed	CN^-	Phenolics	CN^-	Phenolics							
1	Z847		[redacted]	19.4 mg/kg	8 mg/Kg							
2		P381	X571	0.09 mg/L	2.4 mg/L							
3	X610			5 mg/Kg	2 mg/Kg							

Comments:

Koppers021920

3|2

DATE: 26 OCT 84 DJH

LAB #: 84-0734
ITEM #: 1
SAMPLE: 2847

ACID EXTRACTABLES
METHOD 625

AMOUNT MG/KG	PARAMETER	AMOUNT MG/KG	PARAMETER
<1	PHENOL	<1	2,4,6-TRICHLOROPHENOL
<1	2-CHLOROPHENOL	<1	2,4-DINITROPHENOL
<1	2-NITROPHENOL	<1	4-NITROPHENOL
<1	2,4-DIMETHYLPHENOL	<1	2-METHYL-4,6-DINITROPHENOL
<1	2,4-DICHLOROPHENOL	<1	PENTACHLOROPHENOL
<1	4-CHLORO-3-METHYLPHENOL	<1	TETRACHLOROPHENOL **

** REPORTED AS
2,3,4,6-TETRACHLOROPHENOL

BASE/NEUTRAL EXTRACTABLES
METHOD 625

AMOUNT MG/KG	PARAMETER	AMOUNT MG/KG	PARAMETER
<10	BIS(2-CHLOROETHYL) ETHER	150	ACENAPHTHENE
<10	1,3-DICHLOROBENZENE	<10	2,4-DINITROTOLUENE
<10	1,4-DICHLOROBENZENE	280	FLUORENE
<10	1,2-DICHLOROBENZENE	<10	DIETHYLPHTHALATE
<10	HEXACHLOROETHANE	<10	N-NITROSODIPHENYLAMINE
<10	N-NITROSO-DI-N-PROPYLAMINE	<10	4-BROMOPHENYL PHENYL ETHER
<10	NITROBENZENE	<10	HEXACHLOROBENZENE
<10	ISOPHORONE	840	PHENANTHRENE
<10	BIS(2-CHLOROETHOXY) METHANE	1350	ANTHRACENE
<10	1,2,4-TRICHLOROBENZENE	<10	DIBUTYL PHTHALATE
140	NAPHTHALENE	140	FLUORANTHENE
<10	HEXACHLOROBUTADIENE	120	PYRENE
<10	HEXACHLOROCYCLOPENTADIENE	<10	BUTYL BENZYL PHTHALATE
<10	2-CHLORONAPHTHALENE	30	BENZ(A)ANTHRACENE
<10	ACENAPHTHYLENE	30	CHRYSENE
<10	DIMETHYLPHTHALATE	<10	3,3'-DICHLROBENZIDINE
<10	2,6-DINITROTOLUENE	<10	BIS(2-ETHYLHEXYL) PHTHALATE
		<10	BENZ(A)PYRENE

4|2

DATE: 24 SEP 84

LAB #: 84-0734 R2K
ITEM #: 1
SAMPLE: Z647

PCB'S
METHOD 608

AMOUNT MG/KG	PARAMETER
<.05	PCB GROUP 1
<.05	PCB GROUP 2
<.05	PCB GROUP 3
0	TOTAL PCB

PCB GROUP 1 INCLUDES PCB'S 1221, 1232, 1242 AND IS CALCULATED AS 1242.
PCB GROUP 2 INCLUDES PCB'S 1248, 1254 AND IS CALCULATED AS 1254.
PCB GROUP 3 INCLUDES PCB'S 1260, 1262 AND IS CALCULATED AS 1260.

5|2

25 SEP 84

GC/MS SCAN ID

DJH

84-Ø734 Z847

IN ADDITION TO THE PRIORITY POLLUTANT CHEMICALS, THE FOLLOWING COMPOUNDS WERE OBSERVED AT THE ESTIMATED CONCENTRATIONS SHOWN.

COMPOUND	MG/KG
1-METHYLNAPHTHALENE	18Ø
1,3-BENZENEDICARBØNITRILE	2Ø
1,4-DIHYDRO-1,4-METHANONAPHTHALENE	12Ø
1,1'-BIPHENYL	6Ø
2-ETHYLNAPHTHALENE	2Ø
1,7-DIMETHYLNAPHTHALENE	6Ø
1,4-DIMETHYLNAPHTHALENE	35
2,7-DIMETHYLOCTANE	1Ø
DIBENZOFURAN	23Ø
1,3,6-TRIMETHYLNAPHTHALENE	2Ø
2-METHYL-1,1'-BIPHENYL	3Ø
(1,1'-BIPHENYL)-4-CARBOXALDEHYDE	7Ø
9,1Ø-DIHYDROPHENANTHRENE	2Ø
DIBENZOTHIOPHENE	4Ø
9H-CARBAZOLE	3ØØ
4-METHYLDIBENZOTHIOPHENE	3Ø
4-METHYLPHENANTHRENE	7Ø
2-METHYLPHENANTHRENE	13Ø
2,5-DIMETHYLPHENANTHRENE	3Ø
2,3-DIMETHYLPHENANTHRENE	3Ø

63|2

PURGEABLE ORGANICS
EPA METHOD 624

DATE: 11 SEP 84

LAB #: 84-0734 DM
ITEM #: ~~1~~ 2
SAMPLE: B478

AMOUNT MG/L	PARAMETER	STORET NO.
<.001	CHLOROMETHANE	34418
<.001	BROMOMETHANE	34413
<.001	VINYL CHLORIDE	39175
<.001	CHLOROETHANE	34311
<.001	METHYLENE CHLORIDE	34423
<.001	TRICHLOROFLUOROMETHANE	34489
<.001	1,1-DICHLOROETHYLENE	34501
<.001	1,1-DICHLOROETHANE	34531
<.001	TRANS-DICHLOROETHYLENE	34546
<.001	CHLOROFORM	32106
<.001	1,2-DICHLOROETHANE	34531
<.001	1,1,1-TRICHLOROETHANE	34506
<.001	CARBON TETRACHLORIDE	32102
<.001	BROMODICHLOROMETHANE	32101
<.001	1,2-DICHLOROPROPANE	34541
<.001	CIS-1,3-DICHLOROPROPENE	34704
<.001	TRICHLOROETHYLENE	39180
2.0	BENZENE	34030
<.001	DIBROMOCHLOROMETHANE	32105
<.001	1,1,2-TRICHLOROETHANE	34511
<.001	TRANS-1,3-DICHLOROPROPENE	34699
<.001	2-CHLOROETHYL VINYL ETHER	34576
<.001	BROMOFORM	32104
<.001	1,1,2,2-TETRACHLOROETHANE	34516
<.001	1,1,2,2-TETRACHLOROTHYLENE	34475
2.7	TOLUENE	34010
<.001	CHLOROBENZENE	34301
0.3	ETHYL BENZENE	34371
<.001	1,3-DICHLOROBENZENE	34566
<.001	1,2-DICHLOROBENZENE/ 1,4-DICHLOROBENZENE	
<.001	1,2-DIBROMOETHANE (EDB)	

Koppers021924

7/2

DATE: 26 OCT 84 DJH

LAB #: 84-0734
ITEM #: 2
SAMPLE: X599

ACID EXTRACTABLES
METHOD 625

AMOUNT MG/L	PARAMETER	AMOUNT MG/L	PARAMETER
.02	PHENOL	<.01	2,4,6-TRICHLOROPHENOL
<.01	2-CHLOROPHENOL	<.01	2,4-DINITROPHENOL
<.01	2-NITROPHENOL	<.01	4-NITROPHENOL
.01	2,4-DIMETHYLPHENOL	<.01	2-METHYL-4,6-DINITROPHENOL
<.01	2,4-DICHLOROPHENOL	<.01	PENTACHLOROPHENOL
<.01	4-CHLORO-3-METHYLPHENOL	<.01	TETRACHLOROPHENOL **

** REPORTED AS 2,3,4,6-TETRACHLOROPHENOL

BASE/NEUTRAL EXTRACTABLES
METHOD 625

AMOUNT MG/L	PARAMETER	AMOUNT MG/L	PARAMETER
<.01	BIS(2-CHLOROETHYL) ETHER	.03	ACENAPHTHENE
<.01	1,3-DICHLOROBENZENE	<.01	2,4-DINITROTOLUENE
<.01	1,4-DICHLOROBENZENE	.02	FLUORENE
<.01	1,2-DICHLOROBENZENE	<.01	DIETHYLPHTHALATE
<.01	HEXACHLOROETHANE	<.01	N-NITROSODIPHENYLAMINE
<.01	N-NITROSO-DI-N-PROPYLAMINE	<.01	4-BROMOPHENYL PHENYL ETHER
<.01	NITROBENZENE	<.01	HEXACHLOROBENZENE
<.01	ISOPHORONE	.06	PHENANTHRENE
<.01	BIS(2-CHLOROETHOXY) METHANE	<.01	ANTHRACENE
<.01	1,2,4-TRICHLOROBENZENE	<.01	DIBUTYL PHTHALATE
2.24	NAPHTHALENE	<.01	FLUORANTHENE
<.01	HEXACHLOROBUTADIENE	.01	PYRENE
<.01	HEXACHLOROCYCLOPENTADIENE	<.01	BUTYL BENZYL PHTHALATE
<.01	2-CHLORONAPHTHALENE	<.01	BENZ(A)ANTHRACENE
.03	ACENAPHTHYLENE	<.01	CHRYSENE
<.01	DIMETHYLPHTHALATE	<.01	3,3'-DICHLROBENZIDINE
<.01	2,6-DINITROTOLUENE	<.01	BIS(2-ETHYLHEXYL) PHTHALATE
		<.01	BENZ(A)PYRENE

DATE: 24 SEP 84 RRK

8/12

LAB #: 84-0704
ITEM #: 2
SAMPLE: X609

PCB'S
METHOD 608

AMOUNT MG/L	PARAMETER
<.001	PCB GROUP 1
<.001	PCB GROUP 2
<.001	PCB GROUP 3
0	TOTAL PCB

PCB GROUP 1 INCLUDES PCB'S 1221, 1232,
1242 AND IS CALCULATED AS 1242.
PCB GROUP 2 INCLUDES PCB'S 1248, 1254
AND IS CALCULATED AS 1254.
PCB GROUP 3 INCLUDES PCB'S 1260, 1262
AND IS CALCULATED AS 1260.

a|,2

25 SEP 84

GC/MS SCAN ID

D&H

84-Ø734 X599

IN ADDITION TO THE PRIORITY POLLUTANT CHEMICALS, THE FOLLOWING COMPOUNDS WERE OBSERVED AT THE ESTIMATED CONCENTRATIONS SHOWN.

COMPOUND	MG/L
1,2-DIMETHYLBENZENE	Ø.2
1-ETHYNYL-4-METHYL-BENZENE	Ø.4
BENZO(B)THIOPHENE	Ø.3
2-METHYLNAPHTHALENE	Ø.2

DATE: 26 OCT 84

DJH

10/12

LAB #: 84-0734
ITEM #: 3
SAMPLE: X610

ACID EXTRACTABLES
METHOD 625

AMOUNT MG/KG	PARAMETER	AMOUNT MG/KG	PARAMETER
<10	PHENOL	<10	2,4,6-TRICHLOROPHENOL
<10	2-CHLOROPHENOL	<10	2,4-DINITROPHENOL
<10	2-NITROPHENOL	<10	4-NITROPHENOL
<10	2,4-DIMETHYLPHENOL	<10	2-METHYL-4,6-DINITROPHENOL
<10	2,4-DICHLOROPHENOL	<10	PENTACHLOROPHENOL
<10	4-CHLORO-3-METHYLPHENOL	<10	TETRACHLOROPHENOL **

** REPORTED AS 2,3,4,6-TETRACHLOROPHENOL

BASE/NEUTRAL EXTRACTABLES
METHOD 625

AMOUNT MG/KG	PARAMETER	AMOUNT MG/KG	PARAMETER
<10	BIS(2-CHLOROETHYL) ETHER	15	ACENAPHTHENE
<10	1,3-DICHLOROBENZENE	<10	2,4-DINITROTOLUENE
<10	1,4-DICHLOROBENZENE	15	FLUORENE
<10	1,2-DICHLOROBENZENE	<10	DIETHYLPHTHALATE
<10	HEXACHLOROETHANE	<10	N-NITROSODIPHENYLAMINE
<10	N-NITROSO-DI-N-PROPYLAMINE	<10	4-BROMOPHENYL PHENYL ETHER
<10	NITROBENZENE	<10	HEXACHLOROBENZENE
<10	ISOPHORONE	60	PHENANTHRENE
<10	BIS(2-CHLOROETHOXY) METHANE	<10	ANTHRACENE
<10	1,2,4-TRICHLOROBENZENE	<10	DIBUTYL PHTHALATE
920	NAPHTHALENE	30	FLUORANTHENE
<10	HEXACHLOROBUTADIENE	35	PYRENE
<10	HEXACHLOROCYCLOPENTADIENE	<10	BUTYL BENZYL PHTHALATE
<10	2-CHLORONAPHTHALENE	<10	BENZ(A)ANTHRACENE
15	ACENAPHTHYLENE	10	CHRYSENE
<10	DIMETHYLPHTHALATE	<10	3,3'-DICHLROBENZIDINE
<10	2,6-DINITROTOLUENE	<10	BIS(2-ETHYLHEXYL) PHTHALATE
		<10	BENZ(A)PYRENE

11/2

DATE: 24 SEP 84

LAB #: 84-0734
ITEM #: 3
SAMPLE: X610

PCB'S
METHOD 608

AMOUNT MG/KG	PARAMETER
<.05	PCB GROUP 1
<.05	PCB GROUP 2
<.05	PCB GROUP 3
0	TOTAL PCB

PCB GROUP 1 INCLUDES PCB'S 1221, 1232,
1242 AND IS CALCULATED AS 1242.
PCB GROUP 2 INCLUDES PCB'S 1248, 1254
AND IS CALCULATED AS 1254.
PCB GROUP 3 INCLUDES PCB'S 1260, 1262
AND IS CALCULATED AS 1260.

12/12

25 SEP 84

GC/MS SCAN ID

DJH

84-Ø734 X61Ø

IN ADDITION TO THE PRIORITY POLLUTANT CHEMICALS, THE FOLLOWING COMPOUNDS WERE OBSERVED AT THE ESTIMATED CONCENTRATIONS SHOWN.

COMPOUND	MG/KG
1-ETHYNYL-4-METHYL-BENZENE	6Ø
BENZO(B)THIOPHENE	6Ø
2-METHYLNAPHTHALENE	14Ø
1,1'-BIPHENYL	12Ø

3/7

DATE: 27 DEC 84

LAB #: 84-1034
ITEM #: 1
SAMPLE: X565

PESTICIDES
METHOD 625

AMOUNT MG/KG	PARAMETER
<50	ALPHA-BHC
<50	HEPTACHLOR
<50	ALDRIN
<50	HEPTACHLOR EPOXIDE
<50	ENDOSULFAN I
<50	TRANS-NONACHLOR
<50	P,P'-DDE
<50	DIELDRIN
<50	ENDRIN
<50	ENDOSULFAN II
<50	P,P'-DDD
<50	ENDOSULFAN CYCLIC SULFATE
<50	P,P'-DDT
<50	GAMMA-BHC (LINDANE)

4 3/47

27 DEC 84

GC/MS SCAN ID DM

84-1034 X565

THE WATER SAMPLE WAS EXTRACTED BY EPA RCRA PROCEDURE 3540 (ACETONE/HEXANE) AND ANALYZED BY GC/MS. IN ADDITION TO THE PRIORITY POLLUTANT CHEMICALS, THE SAMPLE WAS SCANNED FOR ANY OTHER UNKNOWNS ABOVE THE DETECTION LIMIT OF 1.0 MG/L. THE FOLLOWING COMPOUNDS WERE TENTATIVELY IDENTIFIED WITH THE ESTIMATED CONCENTRATIONS SHOWN.

COMPOUND	MG/KG
4-HYDROXY-4-METHYL-2-PENTANONE	80
ETHYLBENZENE	10
1,2-DIMETHYLBENZENE	54
1,2,4-TRIMETHYLBENZENE	54
1-ETHENYL-2-METHYLBENZENE	36
1-PROPENYLBENZENE	165
2,3-DIHYDRO-4-METHYL-1H-INDENE	52
BENZO(B)THIOPHENE	200
2-METHYLNAPHTHALENE	960
1,1'-BIPHENYL	110
1,8-DIMETHYLBENZENE	150

5/7

DATE: 26 DEC 84 DH

LAB #: 84-1034
ITEM #: 2
SAMPLE: X383

ACID EXTRACTABLES
METHOD 625

AMOUNT MG/L	PARAMETER	AMOUNT MG/L	PARAMETER
.010	PHENOL	<.001	2,4,6-TRICHLOROPHENOL
<.001	2-CHLOROPHENOL	<.001	2,4-DINITROPHENOL
<.001	2-NITROPHENOL	<.001	4-NITROPHENOL
<.001	.018DIMETHYLPHENOL	<.001	2-METHYL-4,6-DINITROPHENOL
<.001	2,4-DICHLOROPHENOL	<.001	PENTACHLOROPHENOL
<.001	4-CHLORO-3-METHYLPHENOL	<.001	TETRACHLOROPHENOL **

** REPORTED AS
2,3,4,6-TETRACHLOROPHENOL

BASE/NEUTRAL EXTRACTABLES
METHOD 625

AMOUNT MG/L	PARAMETER	AMOUNT MG/L	PARAMETER
<.001	BIS(2-CHLOROETHYL) ETHER	.020	ACENAPHTHENE
<.001	1,3-DICHLOROBENZENE	<.001	2,4-DINITROTOLUENE
<.001	1,4-DICHLOROBENZENE	.018	FLUORENE
<.001	1,2-DICHLOROBENZENE	<.001	DIETHYLPHTHALATE
<.001	HEXACHLOROETHANE	<.001	N-NITROSODIPHENYLAMINE
<.001	N-NITROSO-DI-N-PROPYLAMINE	<.001	4-BROMOPHENYL PHENYL ETHER
<.001	NITROBENZENE	<.001	HEXACHLOROBENZENE
<.001	ISOPHORONE	.051	PHENANTHRENE
<.001	BIS(2-CHLOROETHOXY) METHANE	.006	ANTHRACENE
<.001	1,2,4-TRICHLOROBENZENE	<.001	DIBUTYL PHTHALATE
<.001	NAPHTHALENE	.007	FLUORANTHENE
<.001	HEXACHLOROBUTADIENE	.007	PYRENE
<.001	HEXACHLOROCYCLOPENTADIENE	<.001	BUTYL BENZYL PHTHALATE
<.001	2-CHLORONAPHTHALENE	.001	BENZ(A)ANTHRACENE
.023	ACENAPHTHYLENE	.001	CHRYSENE
<.001	DIMETHYLPHTHALATE	<.001	3,3'-DICHLROBENZIDINE
<.001	2,6-DINITROTOLUENE	<.001	BIS(2-ETHYLHEXYL) PHTHALATE
		<.001	BENZ(A)PYRENE

6 3/87

DATE: 26 DEC 84 DJH

LAB #: 84-1034
ITEM #: 2
SAMPLE: X383

PESTICIDES
METHOD 625

AMOUNT MG/L	PARAMETER
<.005	ALPHA-BHC
<.005	HEPTACHLOR
<.005	ALDRIN
<.005	HEPTACHLOR EPOXIDE
<.005	ENDOSULFAN I
<.005	TRANS-NONACHLOR
<.005	P,P'-DDE
<.005	DIELDRIN
<.005	ENDRIN
<.005	ENDOSULFAN II
<.005	P,P'-DDD
<.005	ENDOSULFAN CYCLIC SULFATE
<.005	P,P'-DDT
<.005	GAMMA-BHC (LINDANE)

7/7

26 DEC 84

GC/MS SCAN ID

DJH

84-1034 X383

THE WATER SAMPLE WAS EXTRACTED IN METHYLENE CHLORIDE AND ANALYZED BY GC/MS. IN ADDITION TO THE PRIORITY POLLUTANT CHEMICALS, THE SAMPLE WAS SCANNED FOR ANY OTHER UNKNOWNS. THE FOLLOWING COMPOUNDS WERE TENTATIVELY IDENTIFIED WITH THE ESTIMATED CONCENTRATIONS SHOWN.

COMPOUND	MG/L
METHYLBENZENE	0.02
1,2-DIMETHYLBENZENE	0.11
ETHYLBENZENE	0.06
1-ETHYL-2-METHYLBENZENE	0.02
1-PROPYNYLBENZENE	0.29
1-PHENYLETHANONE	0.02
BENZO(B)THIOPHENE	0.17
2,3-DIHYDRO-1H-INDEN-1-ONE	0.02
2-METHYLNAPHTHALENE	0.14

DEPARTMENT OF ENVIRONMENTAL QUALITY
Request for Analysis

Laboratory No. 84-1034

Location/Site: NW Natural Gas

Date: 12-19-84

Date Received Lab: DEC 19 1984

Collected By: Pettit, Davison, Gray

Program: HW 4292

Date Reported: JAN 04 1985 CHG

Purpose:

Report Data To: Davison, Gray

Comments:

lab prepared

* Basic (P) unpreserved; Nutrient (R) add H_2SO_4 in field; Metals (Tm) HNO_3 added in lab--don't rinse; Organic(X) mason jar

Item No.	Sampling Point Description (include time)	*Sample Container (bottle) #'s: Nutrients / Basic	DO / BOD	Metals / Organic		Test Required
1	Sediment in containment basin 1020 hrs.			X 565		~~Priority Pollutants~~ Acid-Base Neutrals & Pb %M
2	Oil Water Separator 1025 hrs.			TM 1132 X 383		" "
3						
4						
5						
6						

Dept. of Environmental Quality
RECEIVED
JAN 8 1985
NORTHWEST REGION

Laboratory comments

Koppers021936

DEPARTMENT OF ENVIRONMENTAL QUALITY
Laboratory Data Sheet

Laboratory No: 84-1034
Program Code: 4292
Page: 1 of: 1
Analysis Completed: [illegible]

NW Natural Gas Gray

Test Results (All units in mg/l or ~~ug/m³~~ as indicated)

Item No.	metals	Pb	% M									
1	X565	23*	42.%									
2	TM1132	<0.1										

Comments: * mg/kg DRY

Koppers021937

2|57

DATE: 27 DEC 84

LAB #: 84-1034
ITEM #: 1
SAMPLE: X565

ACID EXTRACTABLES
METHOD 625

AMOUNT MG/KG	PARAMETER	AMOUNT MG/KG	PARAMETER
<10	PHENOL	<10	2,4,6-TRICHLOROPHENOL
<10	2-CHLOROPHENOL	<10	2,4-DINITROPHENOL
<10	2-NITROPHENOL	<10	4-NITROPHENOL
<10	2,4-DIMETHYLPHENOL	<10	2-METHYL-4,6-DINITROPHENOL
<10	2,4-DICHLOROPHENOL	<10	PENTACHLOROPHENOL
<10	4-CHLORO-3-METHYLPHENOL	<10	TETRACHLOROPHENOL **

** REPORTED AS
2,3,4,6-TETRACHLOROPHENOL

BASE/NEUTRAL EXTRACTABLES
METHOD 625

AMOUNT MG/KG	PARAMETER	AMOUNT MG/KG	PARAMETER
<10	BIS(2-CHLOROETHYL) ETHER	90	ACENAPHTHENE
<10	1,3-DICHLOROBENZENE	<10	2,4-DINITROTOLUENE
<10	1,4-DICHLOROBENZENE	120	FLUORENE
<10	1,2-DICHLOROBENZENE	<10	DIETHYLPHTHALATE
<10	HEXACHLOROETHANE	<10	N-NITROSODIPHENYLAMINE
<10	N-NITROSO-DI-N-PROPYLAMINE	<10	4-BROMOPHENYL PHENYL ETHER
<10	NITROBENZENE	<10	HEXACHLOROBENZENE
<10	ISOPHORONE	560	PHENANTHRENE
<10	BIS(2-CHLOROETHOXY) METHANE	70	ANTHRACENE
<10	1,2,4-TRICHLOROBENZENE	<10	DIBUTYL PHTHALATE
1750	NAPHTHALENE	140	FLUORANTHENE
<10	HEXACHLOROBUTADIENE	160	PYRENE
<10	HEXACHLOROCYCLOPENTADIENE	<10	BUTYL BENZYL PHTHALATE
<10	2-CHLORONAPHTHALENE	20	BENZ(A)ANTHRACENE
80	ACENAPHTHYLENE	40	CHRYSENE
<10	DIMETHYLPHTHALATE	<10	3,3'-DICHLROBENZIDINE
<10	2,6-DINITROTOLUENE	<10	BIS(2-ETHYLHEXYL) PHTHALATE
		90	BENZ(A)PYRENE

DEPARTMENT OF ENVIRONMENTAL QUALITY
Request for Analysis

Laboratory No. 84-1033

Location/Site: Koppers
Date: 12-19-84
Date Received Lab: DEC 19 1984

Collected By: Pettit, Davison, Gray
Program: HW 4292
Date Reported: JAN 04 1985

Purpose:
Report Data To: Davison, Gray

Comments:

* Basic (P) unpreserved; Nutrient (R) add H_2SO_4 in field; Metals (Tm) HNO_3 added in lab--don't rinse; Organic (X) lab prepared mason jar

Item No.	Sampling Point Description (include time)	*Sample Container (bottle) #'s: Nutrients / Basic	DO / BOD	Metals / Organic		Test Required
1	Well No. 1 (0955 hrs)		① ②	TM 1139, X476		~~Priority Pollutants~~ Acid / BN Pb
2	Well No. 2 (1000 hrs)			TM 1138, X 202		" "
3	Well No. 3 (1005 hrs)			TM 1136, X 647		" "
4	Well No. 4 (1010 hrs)			TM 1137, X 666		" "
5						
6						

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Laboratory comments ① contains ~250 mls ② ~200 mls

Koppers021939

DEPARTMENT OF ENVIRONMENTAL QUALITY
Laboratory Data Sheet

Laboratory No: 84-1033

Program Code: 4292

Page: 1 of: 13

Analysis Completed: [illegible]

Koppers Gray

Item No.	Test Results (All units in mg/l or ug/m³)											
	metals	Pb										
1	TM1139	236										
2	TM1138	22										
3	TM1136	23										
4	TM1137	47										

Comments:

Koppers021940

2\13

DATE: 27 DEC 84 DZH

LAB #: 84-1033
ITEM #: 1
SAMPLE: X476

ACID EXTRACTABLES
METHOD 625

AMOUNT MG/L	PARAMETER
<1	PHENOL
<1	2-CHLOROPHENOL
<1	2-NITROPHENOL
<1	2,4-DIMETHYLPHENOL
<1	2,4-DICHLOROPHENOL
<1	4-CHLORO-3-METHYLPHENOL
<1	2,4,6-TRICHLOROPHENOL
<1	2,4-DINITROPHENOL
<1	4-NITROPHENOL
<1	2-METHYL-4,6-DINITROPHENOL
<1	PENTACHLOROPHENOL
<1	TETRACHLOROPHENOL **

** REPORTED AS 2,3,4,6-TETRACHLOROPHENOL

BASE/NEUTRAL EXTRACTABLES
METHOD 625

AMOUNT MG/L	PARAMETER
<1	BIS(2-CHLOROETHYL) ETHER
<1	1,3-DICHLOROBENZENE
<1	1,4-DICHLOROBENZENE
<1	1,2-DICHLOROBENZENE
<1	HEXACHLOROETHANE
<1	N-NITROSO-DI-N-PROPYLAMINE
<1	NITROBENZENE
<1	ISOPHORONE
<1	BIS(2-CHLOROETHOXY) METHANE
<1	1,2,4-TRICHLOROBENZENE
48	NAPHTHALENE
<1	HEXACHLOROBUTADIENE
<1	HEXACHLOROCYCLOPENTADIENE
<1	2-CHLORONAPHTHALENE
<1	ACENAPHTHYLENE
<1	DIMETHYLPHTHALATE
<1	2,6-DINITROTOLUENE
45	ACENAPHTHENE
<1	2,4-DINITROTOLUENE
65	FLUORENE
<1	DIETHYLPHTHALATE
<1	N-NITROSODIPHENYLAMINE
<1	4-BROMOPHENYL PHENYL ETHER
<1	HEXACHLOROBENZENE
240	PHENANTHRENE
330	ANTHRACENE
<1	DIBUTYL PHTHALATE
110	FLUORANTHENE
88	PYRENE
<1	BUTYL BENZYL PHTHALATE
<1	BENZ(A)ANTHRACENE
<1	CHRYSENE
<1	3,3'-DICHLROBENZIDINE
<1	BIS(2-ETHYLHEXYL) PHTHALATE
<1	BENZ(A)PYRENE

3/13

DATE: 27 DEC 84 DHH

LAB #: 84-1033
ITEM #: 1
SAMPLE: X476

PESTICIDES
METHOD 625

AMOUNT MG/KG	PARAMETER
<5	ALPHA-BHC
<5	HEPTACHLOR
<5	ALDRIN
<5	HEPTACHLOR EPOXIDE
<5	ENDOSULFAN I
<5	TRANS-NONACHLOR
<5	P,P'-DDE
<5	DIELDRIN
<5	ENDRIN
<5	ENDOSULFAN II
<5	P,P'-DDD
<5	ENDOSULFAN CYCLIC SULFATE
<5	P,P'-DDT
<5	GAMMA-BHC (LINDANE)

3/13

27 DEC 84

GC/MS SCAN ID DJH

84-1033 X476

THE WATER SAMPLE WAS EXTRACTED IN METHYLENE CHLORIDE AND ANALYZED BY GC/MS. IN ADDITION TO THE PRIORITY POLLUTANT CHEMICALS, THE SAMPLE WAS SCANNED FOR ANY OTHER UNKNOWNS ABOVE THE DETECTION LIMIT OF 10 MG/L. THE FOLLOWING COMPOUNDS WERE TENTATIVELY IDENTIFIED WITH THE ESTIMATED CONCENTRATIONS SHOWN.

COMPOUND	MG/L
ETHYLBENZENE	380
1,2-DIMETHYLBENZENE	2600

4/13

DATE: 27 DEC 84

DJH

LAB #: 84-1033
ITEM #: 2
SAMPLE: X202

ACID EXTRACTABLES
METHOD 625

AMOUNT MG/L	PARAMETER	AMOUNT MG/L	PARAMETER
<1	PHENOL	<1	2,4,6-TRICHLOROPHENOL
<1	2-CHLOROPHENOL	<1	2,4-DINITROPHENOL
<1	2-NITROPHENOL	<1	4-NITROPHENOL
<1	2,4-DIMETHYLPHENOL	<1	2-METHYL-4,6-DINITROPHENOL
<1	2,4-DICHLOROPHENOL	<1	PENTACHLOROPHENOL
<1	4-CHLORO-3-METHYLPHENOL	<1	TETRACHLOROPHENOL **

** REPORTED AS
2,3,4,6-TETRACHLOROPHENOL

BASE/NEUTRAL EXTRACTABLES
METHOD 625

AMOUNT MG/L	PARAMETER	AMOUNT MG/L	PARAMETER
<1	BIS(2-CHLOROETHYL) ETHER	3	ACENAPHTHENE
<1	1,3-DICHLOROBENZENE	<1	2,4-DINITROTOLUENE
<1	1,4-DICHLOROBENZENE	3	FLUORENE
<1	1,2-DICHLOROBENZENE	<1	DIETHYLPHTHALATE
<1	HEXACHLOROETHANE	<1	N-NITROSODIPHENYLAMINE
<1	N-NITROSO-DI-N-PROPYLAMINE	<1	4-BROMOPHENYL PHENYL ETHER
<1	NITROBENZENE	<1	HEXACHLOROBENZENE
<1	ISOPHORONE	11	PHENANTHRENE
<1	BIS(2-CHLOROETHOXY) METHANE	9	ANTHRACENE
<1	1,2,4-TRICHLOROBENZENE	<1	DIBUTYL PHTHALATE
3	NAPHTHALENE	4	FLUORANTHENE
<1	HEXACHLOROBUTADIENE	3	PYRENE
<1	HEXACHLOROCYCLOPENTADIENE	<1	BUTYL BENZYL PHTHALATE
<1	2-CHLORONAPHTHALENE	<1	BENZ(A)ANTHRACENE
<1	ACENAPHTHYLENE	1	CHRYSENE
<1	DIMETHYLPHTHALATE	<1	3,3'-DICHLROBENZIDINE
<1	2,6-DINITROTOLUENE	<1	BIS(2-ETHYLHEXYL) PHTHALATE
		<1	BENZ(A)PYRENE

5\1³

DATE: 27 DEC 84 Dgll

LAB #: 84-1033
ITEM #: 2
SAMPLE: X202

PESTICIDES
METHOD 625

AMOUNT MG/L	PARAMETER
<5	ALPHA-BHC
<5	HEPTACHLOR
<5	ALDRIN
<5	HEPTACHLOR EPOXIDE
<5	ENDOSULFAN I
<5	TRANS-NONACHLOR
<5	P,P'-DDE
<5	DIELDRIN
<5	ENDRIN
<5	ENDOSULFAN II
<5	P,P'-DDD
<5	ENDOSULFAN CYCLIC SULFATE
<5	P,P'-DDT
<5	GAMMA-BHC (LINDANE)

6/13

Dg11

27 DEC 84

GC/MS SCAN ID

84-1Ø33 X2Ø2

THE WATER SAMPLE WAS EXTRACTED IN METHYLENE CHLORIDE AND ANALYZED BY GC/MS. IN ADDITION TO THE PRIORITY POLLUTANT CHEMICALS, THE SAMPLE WAS SCANNED FOR ANY OTHER UNKNOWNS ABOVE THE DETECTION LIMIT OF Ø.1 MG/L. THE FOLLOWING COMPOUNDS WERE TENTATIVELY IDENTIFIED WITH THE ESTIMATED CONCENTRATIONS SHOWN.

COMPOUND	MG/L
1,2-DIMETHYLBENZENE	3.4
2-METHYLNAPHTHALENE	Ø.3
DIBENZOFURAN	Ø.1

DATE: 28 DEC 84 DJH

LAB #: 84-1033
ITEM #: 3
SAMPLE: X647

1/13

ACID EXTRACTABLES
METHOD 625

AMOUNT MG/L	PARAMETER
<1	PHENOL
<1	2-CHLOROPHENOL
<1	2-NITROPHENOL
<1	2,4-DIMETHYLPHENOL
<1	2,4-DICHLOROPHENOL
<1	4-CHLORO-3-METHYLPHENOL
<1	2,4,6-TRICHLOROPHENOL
<1	2,4-DINITROPHENOL
<1	4-NITROPHENOL
<1	2-METHYL-4,6-DINITROPHENOL
<1	PENTACHLOROPHENOL
<1	TETRACHLOROPHENOL **

** REPORTED AS
2,3,4,6-TETRACHLOROPHENOL

BASE/NEUTRAL EXTRACTABLES
METHOD 625

AMOUNT MG/L	PARAMETER
<1	BIS(2-CHLOROETHYL) ETHER
<1	1,3-DICHLOROBENZENE
<1	1,4-DICHLOROBENZENE
<1	1,2-DICHLOROBENZENE
<1	HEXACHLOROETHANE
<1	N-NITROSO-DI-N-PROPYLAMINE
<1	NITROBENZENE
<1	ISOPHORONE
<1	BIS(2-CHLOROETHOXY) METHANE
<1	1,2,4-TRICHLOROBENZENE
2	NAPHTHALENE
<1	HEXACHLOROBUTADIENE
<1	HEXACHLOROCYCLOPENTADIENE
<1	2-CHLORONAPHTHALENE
<1	ACENAPHTHYLENE
<1	DIMETHYLPHTHALATE
<1	2,6-DINITROTOLUENE
<1	ACENAPHTHENE
<1	2,4-DINITROTOLUENE
3	FLUORENE
<1	DIETHYLPHTHALATE
<1	N-NITROSODIPHENYLAMINE
<1	4-BROMOPHENYL PHENYL ETHER
<1	HEXACHLOROBENZENE
9	PHENANTHRENE
47	ANTHRACENE
<1	DIBUTYL PHTHALATE
3	FLUORANTHENE
2	PYRENE
<1	BUTYL BENZYL PHTHALATE
<1	BENZ(A)ANTHRACENE
2	CHRYSENE
<1	3,3'-DICHLROBENZIDINE
<1	BIS(2-ETHYLHEXYL) PHTHALATE
<1	BENZ(A)PYRENE

DATE: 28 DEC 84

LAB #: 84-1033
ITEM #: 3
SAMPLE: X647

8\13

PESTICIDES
METHOD 625

AMOUNT MG/L	PARAMETER
<5	ALPHA-BHC
<5	HEPTACHLOR
<5	ALDRIN
<5	HEPTACHLOR EPOXIDE
<5	ENDOSULFAN I
<5	TRANS-NONACHLOR
<5	P,P'-DDE
<5	DIELDRIN
<5	ENDRIN
<5	ENDOSULFAN II
<5	P,P'-DDD
<5	ENDOSULFAN CYCLIC SULFATE
<5	P,P'-DDT
<5	GAMMA-BHC (LINDANE)

9\3

DJH

28 DEC 84

GC/MS SCAN ID

84-1033 X647

THE WATER SAMPLE WAS EXTRACTED IN METHYLENE CHLORIDE AND ANALYZED BY GC/MS. IN ADDITION TO THE PRIORITY POLLUTANT CHEMICALS, THE SAMPLE WAS SCANNED FOR ANY OTHER UNKNOWNS ABOVE THE DETECTION LIMIT OF 1.0 MG/L. THE FOLLOWING COMPOUNDS WERE TENTATIVELY IDENTIFIED WITH THE ESTIMATED CONCENTRATIONS SHOWN.

COMPOUND	MG/L
ETHYLBENZENE	24
1,2-DIMETHYLBENZENE	160
2-METHYLNAPHTHALENE	8
DIBENZOFURAN	6
9H-CARBAZOLE	20
4-METHYLPHENANTHRENE	2
3-METHYLPHENANTHRENE	5

10/1,3

DATE: 27 DEC 84 DJH

LAB #: 84-1033
ITEM #: 4
SAMPLE: X666

ACID EXTRACTABLES
METHOD 625

AMOUNT MG/L	PARAMETER	AMOUNT MG/L	PARAMETER
<0.1	PHENOL	<0.1	2,4,6-TRICHLOROPHENOL
<0.1	2-CHLOROPHENOL	<0.1	2,4-DINITROPHENOL
<0.1	2-NITROPHENOL	<0.1	4-NITROPHENOL
<0.1	2,4-DIMETHYLPHENOL	<0.1	2-METHYL-4,6-DINITROPHENOL
<0.1	2,4-DICHLOROPHENOL	<0.1	PENTACHLOROPHENOL
<0.1	4-CHLORO-3-METHYLPHENOL	<0.1	TETRACHLOROPHENOL **

** REPORTED AS
2,3,4,6-TETRACHLOROPHENOL

BASE/NEUTRAL EXTRACTABLES
METHOD 625

AMOUNT MG/L	PARAMETER	AMOUNT MG/L	PARAMETER
<0.1	BIS(2-CHLOROETHYL) ETHER	1.2	ACENAPHTHENE
<0.1	1,3-DICHLOROBENZENE	<0.1	2,4-DINITROTOLUENE
<0.1	1,4-DICHLOROBENZENE	1.9	FLUORENE
<0.1	1,2-DICHLOROBENZENE	<0.1	DIETHYLPHTHALATE
<0.1	HEXACHLOROETHANE	<0.1	N-NITROSODIPHENYLAMINE
<0.1	N-NITROSO-DI-N-PROPYLAMINE	<0.1	4-BROMOPHENYL PHENYL ETHER
<0.1	NITROBENZENE	<0.1	HEXACHLOROBENZENE
<0.1	ISOPHORONE	5.5	PHENANTHRENE
<0.1	BIS(2-CHLOROETHOXY) METHANE	13.1	ANTHRACENE
<0.1	1,2,4-TRICHLOROBENZENE	<0.1	DIBUTYL PHTHALATE
4.2	NAPHTHALENE	1.8	FLUORANTHENE
<0.1	HEXACHLOROBUTADIENE	<0.1	PYRENE
<0.1	HEXACHLOROCYCLOPENTADIENE	<0.1	BUTYL BENZYL PHTHALATE
<0.1	2-CHLORONAPHTHALENE	0.3	BENZ(A)ANTHRACENE
<0.1	ACENAPHTHYLENE	0.5	CHRYSENE
<0.1	DIMETHYLPHTHALATE	<0.1	3,3'-DICHLROBENZIDINE
<0.1	2,6-DINITROTOLUENE	<0.1	BIS(2-ETHYLHEXYL) PHTHALATE
		<0.1	BENZ(A)PYRENE

DATE: 27 DEC 84

LAB #: 84-1033 DJH
ITEM #: 4
SAMPLE: X666

PESTICIDES
METHOD 625

AMOUNT MG/KG	PARAMETER
<0.5	ALPHA-BHC
<0.5	HEPTACHLOR
<0.5	ALDRIN
<0.5	HEPTACHLOR EPOXIDE
<0.5	ENDOSULFAN I
<0.5	TRANS-NONACHLOR
<0.5	P,P'-DDE
<0.5	DIELDRIN
<0.5	ENDRIN
<0.5	ENDOSULFAN II
<0.5	P,P'-DDD
<0.5	ENDOSULFAN CYCLIC SULFATE
<0.5	P,P'-DDT
<0.5	GAMMA-BHC (LINDANE)

DJH

12/3

27 DEC 84

GC/MS SCAN ID

84-1Ø33 X666

THE WATER SAMPLE WAS EXTRACTED IN METHYLENE CHLORIDE AND ANALYZED BY GC/MS. IN ADDITION TO THE PRIORITY POLLUTANT CHEMICALS, THE SAMPLE WAS SCANNED FOR ANY OTHER UNKNOWNS ABOVE THE DETECTION LIMIT OF Ø.1 MG/L. THE FOLLOWING COMPOUNDS WERE TENTATIVELY IDENTIFIED WITH THE ESTIMATED CONCENTRATIONS SHOWN.

COMPOUND	MG/L
ETHYLBENZENE	51
1,2-DIMETHYLBENZENE	22
1-ETHENYL-2-METHYLBENZENE	3
2-METHYLNAPHTHALENE	14
1,1'-BIPHENYL	2
1,7-DIMETHYLNAPHTHALENE	2
1,8-DIMETHYLNAPHTHALENE	2
DIBENZOFURAN	8
9H-CARBAZOLE	1Ø
3-METHYLPHENANTHRENE	2

STATE OF OREGON

INTEROFFICE MEMO

TO: Gary Calaba

DATE: August 9, 1984

FROM: CHGray CHG

SUBJECT: HW - Northwest Natural Gas
Preliminary Assessment
Multnomah County

The old Portland Gas & Coke Company produced oil and gas by gasification of oil with steam. The tar bottoms were disposed on-site. This operation started sometime in the 1880's and terminated in 1956 when they converted to importing liquified natural gas.

The tar bottoms are covered with at least 10 feet of soil cover. Exact locations of disposal are unknown. The site is next to the Willamette River. The shallow alluvial aquifer (approximately 10 feet deep) discharges to the Willamette River.

The Wacker Siltronics plant was built on top of part of the fill. During excavation for the plant site, oil sheen were encountered.

The presence of the tar bottoms due to their location and age pose a low threat to the environment. I do not feel any further investigation is warranted.

Please note letter from Northwest Natural Gas regarding their knowledge of the site. Their NPDES permit issued in 1974 has required oil and grease sampling from the stormwater pond. Up until 1981 it was weekly and was changed to monthly. They have consistently operated within those oil and grease effluent limitations.

/emc

125-1387

EPA

POTENTIAL HAZARDOUS WASTE SITE PRELIMINARY ASSESSMENT
PART 2 - WASTE INFORMATION

I. IDENTIFICATION

01 STATE	02 SITE NUMBER

II. WASTE STATES, QUANTITIES, AND CHARACTERISTICS

01 PHYSICAL STATES (Check all that apply)

☐ A. SOLID
☐ B. POWDER, FINES
☐ C. SLUDGE
☐ D. OTHER ______ (Specify)
☐ E. SLURRY
☐ F. LIQUID
☐ G. GAS

02 WASTE QUANTITY AT SITE (Measures of waste quantities must be independent)

TONS ______
CUBIC YARDS ______
NO. OF DRUMS ______

03 WASTE CHARACTERISTICS (Check all that apply)

☐ A. TOXIC
☐ B. CORROSIVE
☐ C. RADIOACTIVE
☐ D. PERSISTENT
☐ E. SOLUBLE
☐ F. INFECTIOUS
☐ G. FLAMMABLE
☐ H. IGNITABLE
☐ I. HIGHLY VOLATILE
☐ J. EXPLOSIVE
☐ K. REACTIVE
☐ L. INCOMPATIBLE
☐ M. NOT APPLICABLE

III. WASTE TYPE

CATEGORY	SUBSTANCE NAME	01 GROSS AMOUNT	02 UNIT OF MEASURE	03 COMMENTS
SLU	SLUDGE			
OLW	OILY WASTE			
SOL	SOLVENTS			
PSD	PESTICIDES			
OCC	OTHER ORGANIC CHEMICALS			
IOC	INORGANIC CHEMICALS			
ACD	ACIDS			
BAS	BASES			
MES	HEAVY METALS			

IV. HAZARDOUS SUBSTANCES (See Appendix for most frequently cited CAS Numbers)

01 CATEGORY	02 SUBSTANCE NAME	03 CAS NUMBER	04 STORAGE/DISPOSAL METHOD	05 CONCENTRATION	06 MEASURE OF CONCENTRATION

V. FEEDSTOCKS (See Appendix for CAS Numbers)

CATEGORY	01 FEEDSTOCK NAME	02 CAS NUMBER	CATEGORY	01 FEEDSTOCK NAME	02 CAS NUMBER
FDS			FDS		
FDS			FDS		
FDS			FDS		
FDS			FDS		

VI. SOURCES OF INFORMATION (Cite specific references, e.g., state files, sample analysis, reports)

SITE VISIT; INTERVIEW WITH BILL GIBBS; DEQ FILES, NW NATURAL GAS FILES.

EPA FORM 2070-12 (7-81)

Koppers021954

EPA

POTENTIAL HAZARDOUS WASTE SITE
PRELIMINARY ASSESSMENT
PART 3 - DESCRIPTION OF HAZARDOUS CONDITIONS AND INCIDENTS

I. IDENTIFICATION

01 STATE	02 SITE NUMBER

II. HAZARDOUS CONDITIONS AND INCIDENTS

01 ☐ A. GROUNDWATER CONTAMINATION — 02 ☐ OBSERVED (DATE: ______) ☐ POTENTIAL ☐ ALLEGED
03 POPULATION POTENTIALLY AFFECTED: ______ 04 NARRATIVE DESCRIPTION

01 ☐ B. SURFACE WATER CONTAMINATION — 02 ☐ OBSERVED (DATE: ______) ☐ POTENTIAL ☐ ALLEGED
03 POPULATION POTENTIALLY AFFECTED: ______ 04 NARRATIVE DESCRIPTION

01 ☐ C. CONTAMINATION OF AIR — 02 ☐ OBSERVED (DATE: ______) ☑ POTENTIAL ☐ ALLEGED
03 POPULATION POTENTIALLY AFFECTED: ______ 04 NARRATIVE DESCRIPTION

01 ☐ D. FIRE/EXPLOSIVE CONDITIONS — 02 ☐ OBSERVED (DATE: ______) ☐ POTENTIAL ☐ ALLEGED
03 POPULATION POTENTIALLY AFFECTED: ______ 04 NARRATIVE DESCRIPTION

NA

01 ☐ E. DIRECT CONTACT — 02 ☐ OBSERVED (DATE: ______) ☐ POTENTIAL ☐ ALLEGED
03 POPULATION POTENTIALLY AFFECTED: ______ 04 NARRATIVE DESCRIPTION

01 ☐ F. CONTAMINATION OF SOIL — 02 ☐ OBSERVED (DATE: ______) ☐ POTENTIAL ☐ ALLEGED
03 AREA POTENTIALLY AFFECTED: ______ (Acres) 04 NARRATIVE DESCRIPTION

01 ☐ G. DRINKING WATER CONTAMINATION — 02 ☐ OBSERVED (DATE: ______) ☐ POTENTIAL ☐ ALLEGED
03 POPULATION POTENTIALLY AFFECTED: ______ 04 NARRATIVE DESCRIPTION

01 ☐ H. WORKER EXPOSURE/INJURY — 02 ☐ OBSERVED (DATE: ______) ☐ POTENTIAL ☐ ALLEGED
03 WORKERS POTENTIALLY AFFECTED: ______ 04 NARRATIVE DESCRIPTION

01 ☐ I. POPULATION EXPOSURE/INJURY — 02 ☐ OBSERVED (DATE: ______) ☐ POTENTIAL ☐ ALLEGED
03 POPULATION POTENTIALLY AFFECTED: ______ 04 NARRATIVE DESCRIPTION

HW
7.20

INVENTORY-POSSIBLE SOURCES OF HAZARDOUS WASTE

EPA NUMBER:				NPDES#:	
SIC CODE BEG:		SIC CODE END:		BASIN CODE:	
STATE:	*Oregon*	COUNTY:	*Multnomah*	CO CODE:	

NAME: *Northwest Natural Gas*
OWNER:
ADDRESS: *Wacker and Koppers property* ZIP:
CONTACT: Duane Foley PHONE: 226-4211

LOCATION: *Portland, Oregon (see map attached)*
TOWNSHIP: *1N* RANGE: *1E* SECTION: *13*
USGS MAP NAME: *Linnton, Oregon*

BUSINESS TYPE

Mfg oil *gas from petroleum* ended '50s. Now storage facilities

WASTE TYPES

Tars, napthalenes

DISPOSAL ACTIVITIES

On-site fill

PERIOD OF OPERATION: *1880's - 1950's*

HISTORY OF SITE OR PLANT OPERATION

The site covered what is now Wacker and Koppers. The plant manufactured oil *gas by* the *~~cracking petroleum~~ in brick retorts.* *~~There was a benzene plant on the present~~ Koppers area.*
Heat obtained by burning oil in same retort
Ref. I.E.C. 21, 104 (1929)

DETAILS OF WASTE CHARACTERISTICS, VOLUMES AND DISPOSAL OPERATION

Tar bottoms were disposed on-site including filling of Doane Lake. The more liquid material was ponded. It is believed (R. Gitschlag) that there may be 10 to 20 fee of tar over a good deal of the site that has been covered by about 10 feet of fill. A pipe draining the Wacker property (to river just west of RR bridge) shows an oil sheen.

SIC CODES

INVENTORY-POSSIBLE SOURCES OF HAZARDOUS WASTE

****

EPA NUMBER: ____________

WASTE CHARACTERISTICS

IGNITABLE:				SOLID:	X
CORROSIVE:		RADIOACTIVE:		SEMI-SOLID:	X
REACTIVE:		INFECTIOUS:		LIQUID:	X
TOXIC:	X	OTHER:		GASEOUS:	

TOTAL WASTE QUANTITIES

VERY LARGE AMOUNT:	X		COUNTED:	
LARGE AMOUNT:		AMOUNT OF WASTE	ESTIMATED:	
SMALL AMOUNT:			REPORTED:	
VERY SMALL AMOUNT:		TONS,YDS,BBL,ETC	MEASURED:	

WASTE DISPOSAL

REGULATORY CONTROLS: *None*

WASTE TRANSPORTED TO SITES #:

WASTE DISPOSED INTO SEWER SYSTEM: *None*

WASTE DISPOSED IN EFFLUENT:

WASTE DISPOSED OF ON SITE: *All*

ON SITE DISPOSAL

INCINERATION:		LAND SPREADING:	
SURFACE STORAGE:	X	BURIAL:	X
WELL INJECTION:		OTHER:	

SITE CONDITIONS

GEOLOGIC SETTING

Fill over old lake bed

HYDROLOGIC CONDITIONS

DISTANCE OF LAKE OR MARINE WATER:

DISTANCE TO SURFACE STREAM: *Adjacent to Willamette River*

DEPTH TO GROUNDWATER: *5 to 10 feet*

DISTANCE TO WELLS OR SPRINGS:

DISTANCE TO NEAREST RESIDENCE:

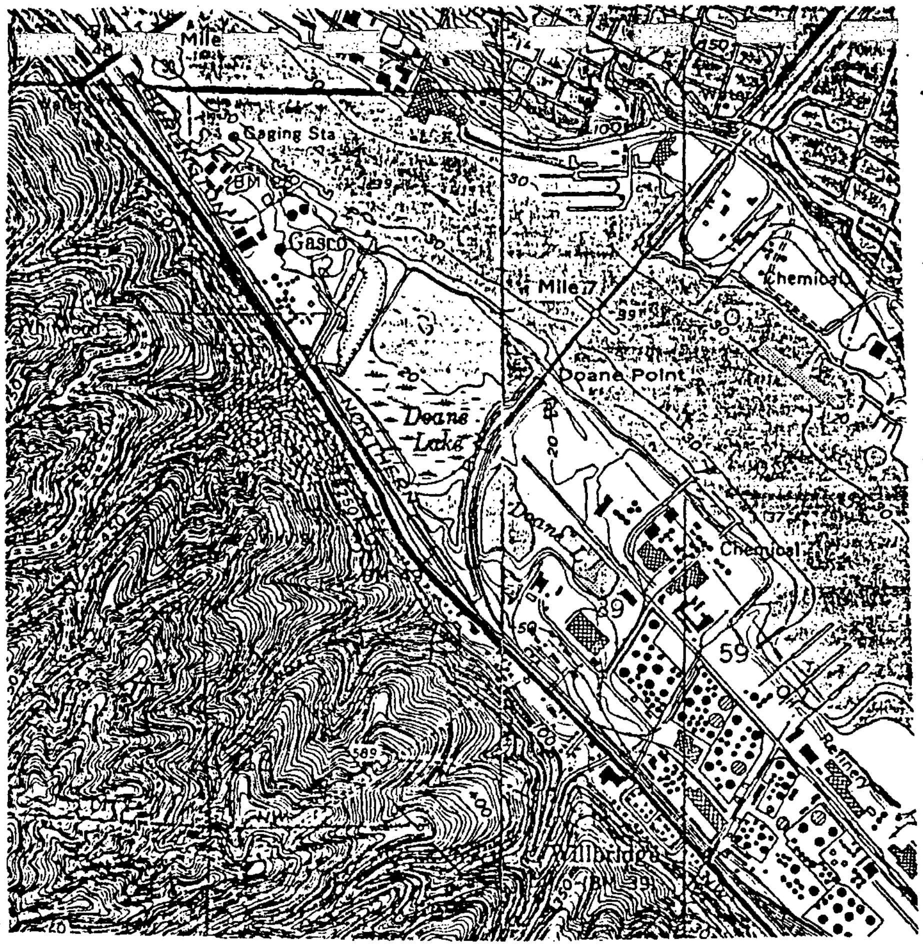
USE OF SITE IF ABANDONED: *New plant site, empty lot*

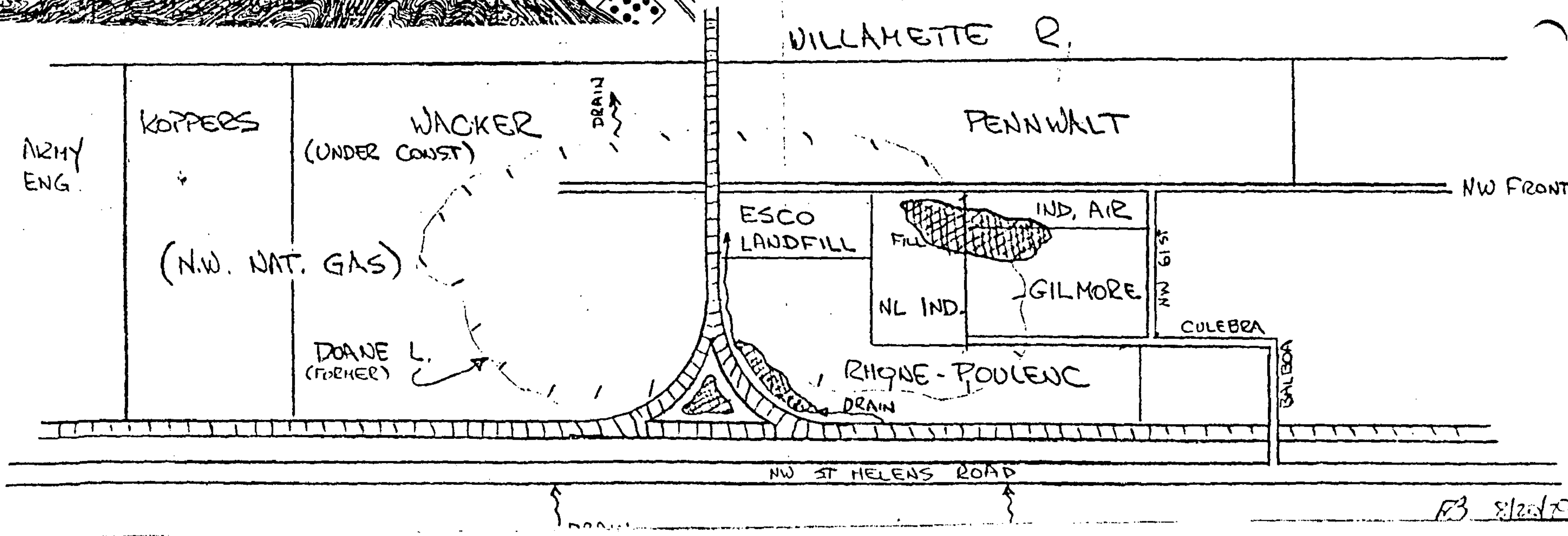
PHYSICAL CONTROLS AT SITE

SOURCES OF INFORMATION: *Dick Gitschlag, Rhone-Poulenc, plant mgr. site visit 8/17/79.*

COMPILER: *Fred Bromfeld* DATE: *August 20, 1979*

DOANE LAKE AREA





SUGGEST FOLLOW-UP

Doane Lake Area

1. It was originally thought that this area consisted of two lakebeds, Doane (east) and Giles (west), created from the old Doane Lake as a result of constructing the railroad bed in 1910. The recognition of Giles Lake as a separate entity, however, never came into common usage and it is not generally referred to on maps. As such, we shall refer to this area simply as Doane Lake.

   This will also avoid confusion with the Guilds Lake area about two miles to the S.E.

2. Almost the entire lake has been covered with 5 - 10 ft. of fill. The area, however, is a natural sump and the water table is only about 5 ft. below the surface. During a wet winter it may surface in some areas. The old Doane Lake fluctuated about 5 ft. in depth.

To: CHG
NWG

UU (I 17 1984
NORTHWEST REGION

From: [illegible]
HZW

Subject: Northwest Natural Gas

MESSAGE

Did you want to update status before I send this to the EPA?

Date 10-17-84 Signed Gary

REPLY

Date Signed

WilsonJones
GRAYLINE FORM 44-902 3-PART
PRINTED IN U.S.A.

RECIPIENT—RETAIN WHITE COPY, RETURN PINK COPY
283

Koppers021960

STATE OF OREGON

INTEROFFICE MEMO

TO: Gary Calaba

DATE: August 9, 1984

FROM: CHGray CHG

RECEIVED AUG 9 1984

SUBJECT: HW - Northwest Natural Gas
Preliminary Assessment
Multnomah County

The old Portland Gas & Coke Company produced oil and gas by gasification of oil with steam. The tar bottoms were disposed on-site. This operation started sometime in the 1880's and terminated in 1956 when they converted to importing liquified natural gas.

The tar bottoms are covered with at least 10 feet of soil cover. Exact locations of disposal are unknown. The site is next to the Willamette River. The shallow alluvial aquifer (approximately 10 feet deep) discharges to the Willamette River.

The Wacker Siltronics plant was built on top of part of the fill. During excavation for the plant site, oil sheen were encountered.

The presence of the tar bottoms due to their location and age pose a low threat to the environment. I do not feel any further investigation is warranted.

Please note letter from Northwest Natural Gas regarding their knowledge of the site. Their NPDES permit issued in 1974 has required oil and grease sampling from the stormwater pond. Up until 1981 it was weekly and was changed to monthly. They have consistently operated within those oil and grease effluent limitations.

/emc

25-1387

EPA	**POTENTIAL HAZARDOUS WASTE SITE** **PRELIMINARY ASSESSMENT** **PART 1 - SITE INFORMATION AND ASSESSMENT**	**I. IDENTIFICATION** 01 STATE | 02 SITE NUMBER

II. SITE NAME AND LOCATION

01 SITE NAME (Legal, common, or descriptive name of site) N[illegible] NAT[illegible] [illegible]	02 STREET, ROUTE NO., OR SPECIFIC LOCATION IDENTIFIER [illegible] N.W. ST. HELENS RD.				
03 CITY PORTLAND	04 STATE OR	05 ZIP CODE [illegible]7203	06 COUNTY MULTNOMAH	07 COUNTY CODE	08 CONG DIST
09 COORDINATES LATITUDE __ __ __._	LONGITUDE ___ __ __._				

10 DIRECTIONS TO SITE (Starting from nearest public road)
NORTH ON N.W. ST. HELENS RD., TAKE DRIVEWAY ON RIGHT JUST BEFORE YOU GO UNDER ST. JOHNS BRIDGE. STAY TO RIGHT ON DRIVEWAY.

III. RESPONSIBLE PARTIES

01 OWNER (If known) WACKER SILTRONIC CORPORATION	02 STREET (Business, mailing, residential) 7200 N.W. FRONT AVE.		
03 CITY PORTLAND	04 STATE OR	05 ZIP CODE 97203	06 TELEPHONE NUMBER (503) 243-2020
07 OPERATOR (If known and different from owner) NORTHWEST NATURAL GAS CO.	08 STREET (Business, mailing, residential) 202 N.W. 2nd AVE.		
09 CITY PORTLAND	10 STATE OR.	11 ZIP CODE 97209	12 TELEPHONE NUMBER (503) 226-4211

13 TYPE OF OWNERSHIP (Check one)
☒ A. PRIVATE ☐ B. FEDERAL: ______ (Agency name) ☐ C. STATE ☐ D. COUNTY ☐ E. MUNICIPAL
☐ F. OTHER: ______ (Specify) ☐ G. UNKNOWN

14 OWNER/OPERATOR NOTIFICATION ON FILE (Check all that apply)
☐ A. RCRA 3001 DATE RECEIVED: __/__/__ MONTH DAY YEAR ☐ B. UNCONTROLLED WASTE SITE (CERCLA 103 c) DATE RECEIVED: __/__/__ MONTH DAY YEAR ☐ C. NONE

IV. CHARACTERIZATION OF POTENTIAL HAZARD

01 ON SITE INSPECTION
☒ YES DATE 6,20,84 MONTH DAY YEAR
☐ NO
BY (Check all that apply)
☐ A. EPA ☐ B. EPA CONTRACTOR ☒ C. STATE ☐ D. OTHER CONTRACTOR
☐ E. LOCAL HEALTH OFFICIAL ☐ F. OTHER: ______ (Specify)
CONTRACTOR NAME(S): ______

02 SITE STATUS (Check one) ☐ A. ACTIVE ☒ B. INACTIVE ☐ C. UNKNOWN	03 YEARS OF OPERATION 1882 (BEGINNING YEAR) | 1956 (ENDING YEAR) ☐ UNKNOWN

04 DESCRIPTION OF SUBSTANCES POSSIBLY PRESENT, KNOWN, OR ALLEGED
TAR BOTTOMS FROM GASIFICATION OF OIL WITH STEAM

05 DESCRIPTION OF POTENTIAL HAZARD TO ENVIRONMENT AND/OR POPULATION
LOW POTENTIAL HAZARD TO THE ENVIRONMENT AND THE PUBLIC. LOCATION DOES NOT POSE THREAT TO MUNICIPAL WATER SOURCE OR PRIVATE SOURCES.

V. PRIORITY ASSESSMENT

01 PRIORITY FOR INSPECTION (Check one. If high or medium is checked, complete Part 2 - Waste Information and Part 3 - Description of Hazardous Conditions and Incidents)
☐ A. HIGH (Inspection required promptly) ☐ B. MEDIUM (Inspection required) ☐ C. LOW (Inspect on time available basis) ☒ D. NONE (No further action needed, complete current disposition form)

VI. INFORMATION AVAILABLE FROM

01 CONTACT WILLIAM GIBBS	02 OF (Agency/Organization) NORTHWEST NATURAL GAS CO.			03 TELEPHONE NUMBER (503) 226-4211
04 PERSON RESPONSIBLE FOR ASSESSMENT CHARLES GRAY	05 AGENCY DEQ	06 ORGANIZATION STATE OF OR.	07 TELEPHONE NUMBER (503) 229-5288	08 DATE 7,30,84 MONTH DAY YEAR

EPA FORM 2070-12 (7-81)

EPA

POTENTIAL HAZARDOUS WASTE SITE PRELIMINARY ASSESSMENT
PART 3 - DESCRIPTION OF HAZARDOUS CONDITIONS AND INCIDENTS

I. IDENTIFICATION	
01 STATE	02 SITE NUMBER

II. HAZARDOUS CONDITIONS AND INCIDENTS

01 ☐ A. GROUNDWATER CONTAMINATION — 02 ☐ OBSERVED (DATE: ________) ☐ POTENTIAL ☐ ALLEGED
03 POPULATION POTENTIALLY AFFECTED: ________ 04 NARRATIVE DESCRIPTION

01 ☐ B. SURFACE WATER CONTAMINATION — 02 ☐ OBSERVED (DATE: ________) ☐ POTENTIAL ☐ ALLEGED
03 POPULATION POTENTIALLY AFFECTED: ________ 04 NARRATIVE DESCRIPTION

01 ☐ C. CONTAMINATION OF AIR — 02 ☐ OBSERVED (DATE: ________) ☐ POTENTIAL ☐ ALLEGED
03 POPULATION POTENTIALLY AFFECTED: ________ 04 NARRATIVE DESCRIPTION

01 ☐ D. FIRE/EXPLOSIVE CONDITIONS — 02 ☐ OBSERVED (DATE: ________) ☐ POTENTIAL ☐ ALLEGED
03 POPULATION POTENTIALLY AFFECTED: ________ 04 NARRATIVE DESCRIPTION

01 ☐ E. DIRECT CONTACT — 02 ☐ OBSERVED (DATE: ________) ☐ POTENTIAL ☐ ALLEGED
03 POPULATION POTENTIALLY AFFECTED: ________ 04 NARRATIVE DESCRIPTION

01 ☐ F. CONTAMINATION OF SOIL — 02 ☐ OBSERVED (DATE: ________) ☐ POTENTIAL ☐ ALLEGED
03 AREA POTENTIALLY AFFECTED: ________ (Acres) 04 NARRATIVE DESCRIPTION

01 ☐ G. DRINKING WATER CONTAMINATION — 02 ☐ OBSERVED (DATE: ________) ☐ POTENTIAL ☐ ALLEGED
03 POPULATION POTENTIALLY AFFECTED: ________ 04 NARRATIVE DESCRIPTION

01 ☐ H. WORKER EXPOSURE/INJURY — 02 ☐ OBSERVED (DATE: ________) ☐ POTENTIAL ☐ ALLEGED
03 WORKERS POTENTIALLY AFFECTED: ________ 04 NARRATIVE DESCRIPTION

01 ☐ I. POPULATION EXPOSURE/INJURY — 02 ☐ OBSERVED (DATE: ________) ☐ POTENTIAL ☐ ALLEGED
03 POPULATION POTENTIALLY AFFECTED: ________ 04 NARRATIVE DESCRIPTION

NORTHWEST NATURAL GAS COMPANY

Dept. of Environmental Quality
RECEIVED
AUG 6 1984
NORTHWEST REGION

August 2, 1984

Mr. Charles H. Gray
Asst. Regional Manager, NW Region
Department of Environmental Quality
522 S.W. 5th AVe.
Portland, OR 97201

Dear Mr. Gray:

I am writing in response to your recent inquiry concerning operations at the former Portland Gas & Coke Company plant near Linnton, and activities following the plant's shutdown in the late 1950's. A flow diagram of the process is enclosed.

Two accumulations of process residue remained when PG&C stopped manufacturing gas. A spent oxide pile with a volume of approximately 41,000 cubic yards was near the north end of the property: a tar pond estimated to contain some 30,000 cubic yards was located farther south (upstream).

We have some qualitative data on file for these materials, but little quantitative information on specific chemical compounds.

Most of the PG&C facilities were razed in the late 1960's, when construction of a liquefied natural gas (LNG) plant was begun. One portion of the existing small-tank farm was leased to Koppers: those tanks are still in use. Other, larger tanks near the riverbank were eventually reconditioned and are now leased to Pacific Northern Oil. Other tanks and metal structures were sold for scrap. Lampblack from Dorr thickeners was trucked offsite during demolition of the old gas plant. Its final disposition is not known.

In the early 1970's, all the remaining structures except the old Administration Building were demolished, and underground piping removed, in preparation for building a substitute natural gas (SNG) plant. That plant was never constructed, and the designated area is now used to store crushed rock.

As part of the general site cleanup associated with SNG preparations, the spent oxide pile was mainly hauled to the Scappoose landfill. The balance of

wlgdeq

that pile, with large amounts of overburden from the neighboring Rivergate Rock facility, was mixed with the ponded tar. After covering with additional overburden the property, was graded level.

With regard to your question on water quality, we have monitored effluent from our holding-pond discharge to the Willamette River since 1975. The initial permit, NPDES #1964-J, was in effect until February 11, 1981. At that time, it was superseded by the less stringent NPDES General Permit #0100-J. This second permit expires on December 31, 1985.

Please call if you have any questions or need additional information.

Sincerely,

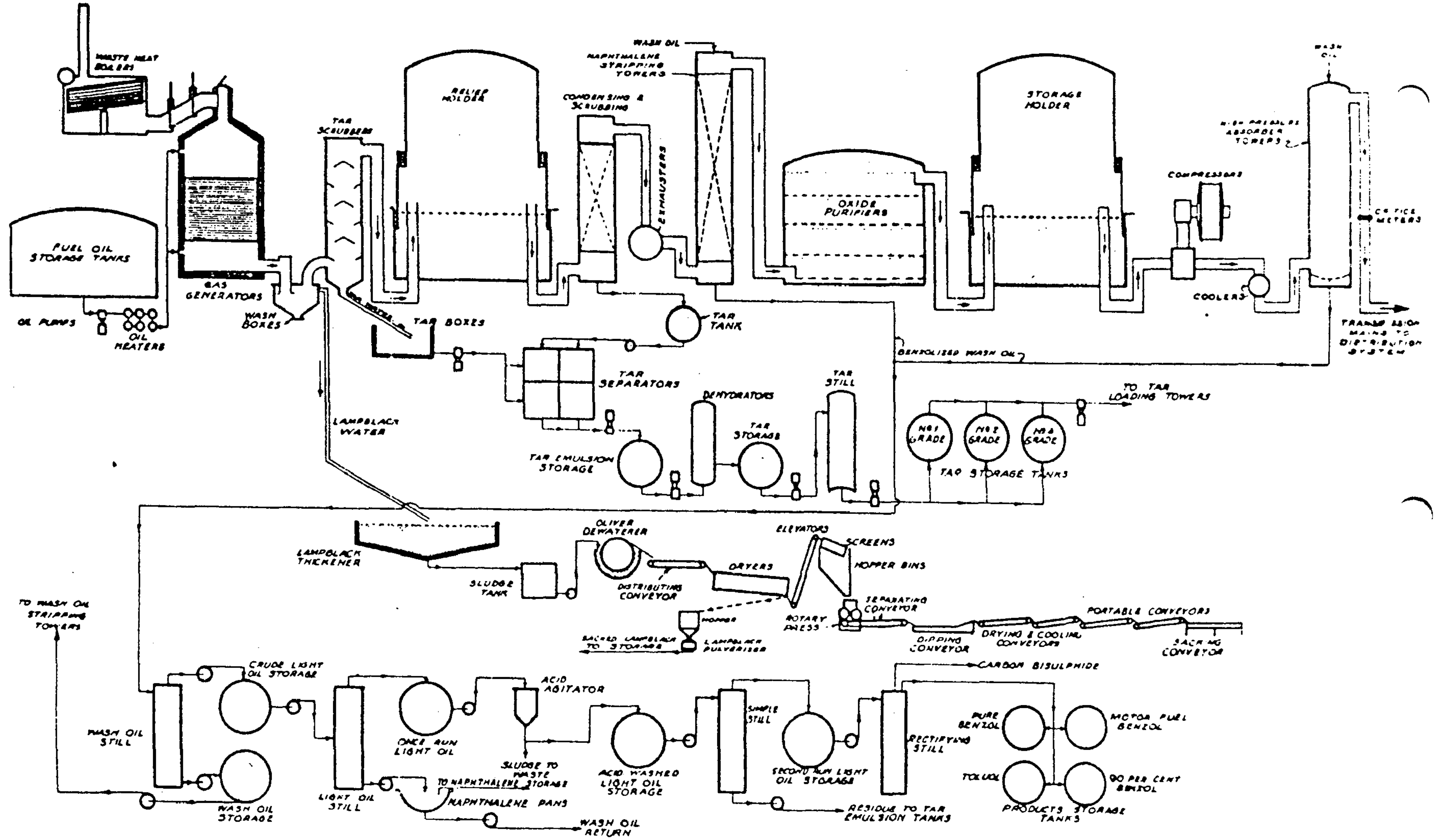
W. L. Gibbs

W. L. Gibbs, Manager
Engineering Department

WLG:lb
Encl.

cc: J. Van Bladeren
E. L. Bolin
D. L. Foley
R. W. Gullberg

wlgdeq1



PORTLAND GAS & COKE COMPANY

GAS MANUFACTURING & BY PRODUCTS FLOW DIAGRAM

Koppers021966

HW 7.20

INVENTORY-POSSIBLE SOURCES OF HAZARDOUS WASTE

EPA NUMBER: ______ NPDES#: ______

SIC CODE BEG: ______ SIC CODE END: ______ BASIN CODE: ______

STATE: Oregon COUNTY: Multnomah CO CODE: ______

NAME: Northwest Natural Gas

OWNER:

ADDRESS: Wacker and Koppers property ZIP:

CONTACT: Duane Foley PHONE: 226-4211

LOCATION: Portland, Oregon (see map attached)

TOWNSHIP: 1N RANGE: 1E SECTION: 13

USGS MAP NAME: Linnton, Oregon

BUSINESS TYPE

Mfg oil gas from petroleum ended '50s, - Now storage facilities

WASTE TYPES

Tars, napthalenes

DISPOSAL ACTIVITIES

On-site fill

PERIOD OF OPERATION: 1880's - 1950's

HISTORY OF SITE OR PLANT OPERATION

The site covered what is now Wacker and Koppers. The plant manufactured oil gas by the ~~cracking petroleum~~ in brick retorts. Heat obtained by burning oil in same retort Ref. I.E.C. 21, 104 (1929) There was a benzene plant on the present Koppers area.

DETAILS OF WASTE CHARACTERISTICS, VOLUMES AND DISPOSAL OPERATION

Tar bottoms were disposed on-site including filling of Doane Lake. The more liquid material was ponded. It is believed (R. Gitschlag) that there may be 10 to 20 ft of tar over a good deal of the site that has been covered by about 10 feet of fill. A pipe draining the Wacker property (to river just west of RR bridge) shows an oil sheen.

SIC CODES

INVENTORY–POSSIBLE SOURCES OF HAZARDOUS WASTE

EPA NUMBER: ______

WASTE CHARACTERISTICS

IGNITABLE:				SOLID:	X
CORROSIVE:		RADIOACTIVE:		SEMI-SOLID:	X
REACTIVE:		INFECTIOUS:		LIQUID:	X
TOXIC:	X	OTHER:		GASEOUS:	

TOTAL WASTE QUANTITIES

VERY LARGE AMOUNT:	X		COUNTED:
LARGE AMOUNT:		AMOUNT OF WASTE	ESTIMATED:
SMALL AMOUNT:			REPORTED:
VERY SMALL AMOUNT:		TONS, YDS, BBL, ETC	MEASURED:

WASTE DISPOSAL

REGULATORY CONTROLS: *None*

WASTE TRANSPORTED TO SITES #:

WASTE DISPOSED INTO SEWER SYSTEM: *None*

WASTE DISPOSED IN EFFLUENT:

WASTE DISPOSED OF ON SITE: *All*

ON SITE DISPOSAL

INCINERATION:		LAND SPREADING:	
SURFACE STORAGE:	X	BURIAL:	X
WELL INJECTION:		OTHER:	

SITE CONDITIONS

GEOLOGIC SETTING

Fill over old lake bed

HYDROLOGIC CONDITIONS

DISTANCE OF LAKE OR MARINE WATER:

DISTANCE TO SURFACE STREAM: *Adjacent to Willamette River*

DEPTH TO GROUNDWATER: *5 to 10 feet*

DISTANCE TO WELLS OR SPRINGS:

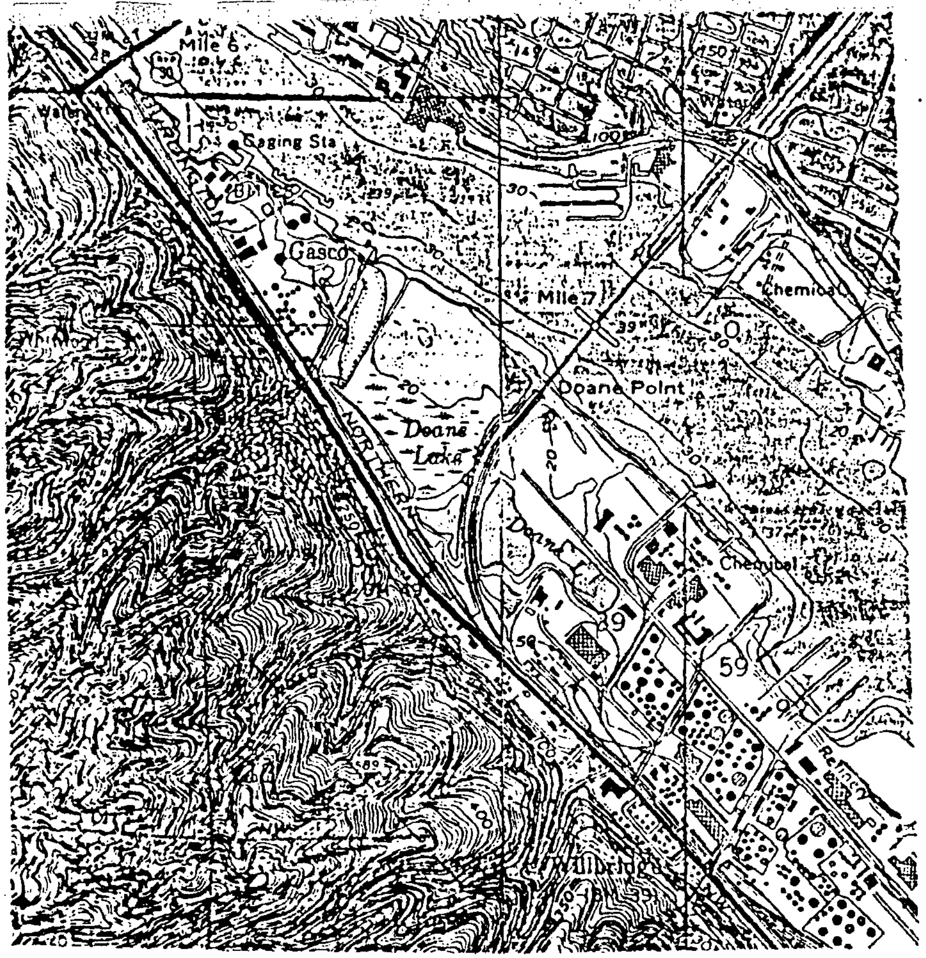
DISTANCE TO NEAREST RESIDENCE:

USE OF SITE IF ABANDONED: *New plant site, empty lot*

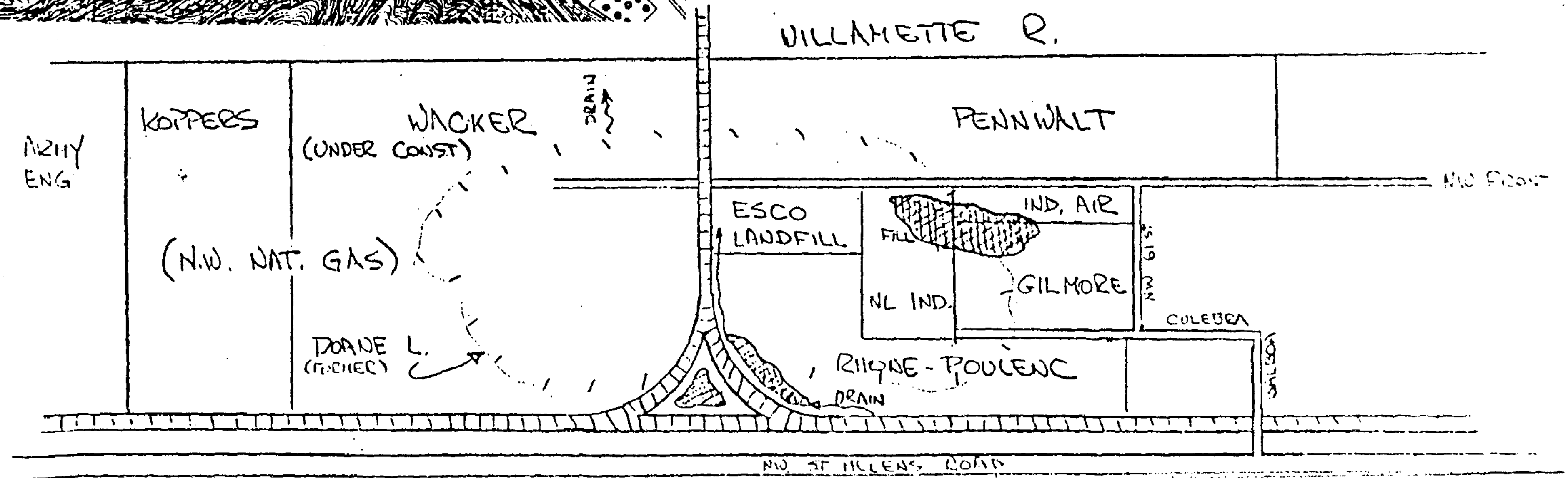
PHYSICAL CONTROLS AT SITE

SOURCES OF INFORMATION: *Dick Gitschlag, Rhone-Poulenc, plant mgr. site visit 8/17/79.*

COMPILER: *Fred Bromfeld* DATE: *August 20, 1979*



DOANE LAKE AREA



SUGGEST FOLLOW-UP

Doane Lake Area

1. It was originally thought that this area consisted of two lakebeds, Doane (east) and Giles (west), created from the old Doane Lake as a result of constructing the railroad bed in 1910. The recognition of Giles Lake as a separate entity, however, never came into common usage and it is not generally referred to on maps. As such, we shall refer to this area simply as Doane Lake.

   This will also avoid confusion with the Guilds Lake area about two miles to the S.E.

2. Almost the entire lake has been covered with 5 - 10 ft. of fill. The area, however, is a natural sump and the water table is only about 5 ft. below the surface. During a wet winter it may surface in some areas. The old Doane Lake fluctuated about 5 ft. in depth.

Clean-
file:
DOANE'S
LAKE

STATE OF OREGON

DEPARTMENT OF ENVIRONMENTAL QUALITY

INTEROFFICE MEMO

TO: Governor Vic Atiyeh

DATE: June 19, 1985

FROM: Fred Hansen

SUBJECT: History of the Doane's Lake Industrial District (Wacker Siltronics Site)

BACKGROUND

The industrial portion of northwest Portland was once two lakes: Doane's Lake to the north, and Guild's Lake to the south. These areas have been filled with a mixture of dredge sands and muds from the Willamette River and industrial wastes. The area has been heavily industrialized for nearly the past 100 years. Activities now regulated by DEQ, including waste water discharges, surface and groundwater pollution problems, air pollution discharges, and landfilling of industrial solid and hazardous waste have all occurred in the area, prior to regulation. In addition, sediment from the Willamette could have concentrated the more toxic elements of the industrial discharges.

WACKER NEIGHBORHOOD

In 1976, Wacker Siltronic purchased 85 acres in the Doane's Lake District. The site is adjacent to the SP & S Railroad Bridge, and is bordered on the east by the Willamette River, west by Highway 30, and north by Kopper's and Northwest Natural Gas. Within 1/2 mile of the plant are various industrial plants, including Gould Battery, Pennwalt, Rhone-Poulenc, and an ESCO landfill. All of these have potential pollution problems associated with them.

KOPPER'S

Koppers constructed a plant to make coal tar pitch for the aluminum industry in 1966. This process ceased operation in 1973. Since then, the facility has been used for blending creosote and pentachlorophenol solutions.

NORTHWEST NATURAL GAS

This facility adjacent to Northwest St. Helens Road was a coal gasification plant which operated in the late 1800's. The bottoms from the manufacturing of oil gas were landfilled on site, on the Kopper's site and on the Wacker site. The plant closed in the 1950's.

PENNWALT

Pennwalt manufactures chlorine at its facility located between First Avenue and the Willamette River. The plant was built during World War II. The majority of discharges have been to the Willamette River. Discharges would have been caustic and acidic and included traces of some metals.

ESCO

ESCO has a landfill between Rhone-Poulenc and Gould where casting sands have been disposed of. These sands include some naturally-occurring radioactive isotopes, along with phenolic resins used as a binder. The concentration of naturally-occurring radioactive isotopes is below the state definition of radioactive materials.

GOULD BATTERY

Gould Battery presently owns a former battery manufacturing facility between Highway 30 and Front Avenue. The company purchased the property in 1979. About 10,000 tons of old battery casings remain on the property. The batteries contain lead oxide which can be both an air and water pollution problem. In 1980, the Gould battery site was listed as one of the two Oregon Superfund sites. An attempt to recycle the useful portions of the battery casings has failed, and EPA and the company are now working to reach agreement on a cleanup program.

RHONE-POULENC

Rhone-Poulenc owns and operates a pesticide company located adjacent to Northwest St. Helens Road. The company was earlier operated as Rhodia Chemical Company, and Chipman Chemical.

The groundwater around the plant is contaminated with pesticides. This contamination occurred over a long period of time due to product loss from spills and leaking tanks and lines.

The company has completed a very detailed, several year study of the groundwater in the area. Based on that information, the company is on a long-term cleanup program which requires pumping the groundwater from beneath the plant and treating it prior to discharge to the Willamette River.

SUMMARY

The Doane's Lake district is a very industrialized area with associated pollution problems. Until Wacker Siltronic and its consultants CH_2M Hill share their data on the soil analysis which prompted the delay of the poly plant with the Department, we are unable to know if the concentrations of chemicals in the soils are above what would be expected. All of the chemicals which are known to have been found in the testing to date can be associated with Wacker's neighboring industries.

The steps to resolving the problem include additional sampling to determine the extent of the problem, and then evaluating various cleanup alternatives. The cleanup alternatives could range from leaving the material in place to removing it to a chemical landfill.

We will continue to work with Wacker to determine the extent of the pollution problems in their property, and to resolve those problems expeditiously. I will keep you informed.

FH:y
RY561

STATE OF OREGON

DEPARTMENT OF ENVIRONMENTAL QUALITY INTEROFFICE MEMO

TO: File DATE: February 14, 1984

FROM: J.A. Gillaspie

SUBJECT: Summary of City-State Meeting on Doane's Lake

Attending from DEQ staff were Tom Bispham, Larry Patterson, Chuck Clinton, Kent Ashbaker, Neil Mullane, Gayla Reese, Rich Reiter and myself. Also in attendance were Bill Bartholomew from the Water Resources Department, Harry Edmonds from the City of Portland, Dr. Charles Schade from Multnomah County, Steven Boedigheimer and Art Keil from the State Health Division.

Gould Battery

Chuck Clinton reviewed the Department's cleanup strategy at Gould Battery. The company has hired Al-Chem Western to clean up the batteries. They plan to recycle the cases and have obtained the necessary DEQ letter permits to operate. They brought the recycling machine to the site December 31, and on January 28 operated it for the first time. It operated for about half the day before a bearing failed. They plan to be back on line soon. The company is grinding up the cases, washing them with a detergent and then separating them by water. The rubber casings will sink and the polypropylene cases will float. The cases will then be rinsed and air-dried. The polypropylene will be recycled at AM Polymers of Arlington, TN.

The company does not yet have a recycler for the rubber casings, but hopes to use them as a hog fuel supplement in Longview. However, the company wants to test the finished product first. The lead will be removed with the mud and will be taken to the Bergsoe Battery Smelter in St. Helens. The effluent water will be recycled. The company has installed settling chambers and filters. The filters will be taken to Bergsoe. When the recycling operation is complete, the waste water pH will be raised to above 9 to precipitate out the lead. The waste water will be filtered and then tested. If the leachable lead content is within standards, it will be discharged back into the lake on the property. The cleanup effort should take about 3 months. Soil and pond sediment sampling will be completed by Gould after the battery excavation cleanup is completed.

As the Department indicated in the previous meeting, the wells and the property were to be resampled for dissolved lead. Gould's consultants found about 1 part per million of total lead and about 0.001 parts per million of dissolved lead. DEQ tested to verify those results and found different results. They found about 0.5 parts per million of dissolved lead. The reasons for this are twofold: their consultants' sampling techniques were different, and the Department had a better analytical method. Even so, the levels of dissolved lead are not considered to be a problem because the aquifer is not put to any beneficial use. The Department has asked EPA to assist us in doing a pump test to determine if there is a link between the shallow and deep aquifers.

The conclusion of the cleanup program is that Gould will need to do further sampling, both soil and groundwater, in order to make the necessary findings about final cleanup for both DEQ and EPA.

Rhone-Poulenc

Larry Patterson reviewed the status of Rhone-Poulenc Company, known in Portland as both Rhodia and Chipman Chemical. They manufactured 2,4-D until that process was shut permanently in July, 1982. They now manufacture only a brominated phenol herbicide. They started that process in 1971. In 1975, the company's process wastewater was connected to the City of Portland's sewerage system, and there has been a rainwater collection and treatment system in place for some time.

In 1980, shallow groundwater monitors indicated a groundwater pollution problem on the plant side. Rhone-Poulenc hired Dames and Moore as groundwater consultants to survey the area and to assess the need for a a cleanup. They used 10 monitoring wells, 4 pisometers, and 6 lisometers. Five of the wells were on the plant site and five were downgradient.

At the last meeting, four rounds of sampling had been completed. An additional sampling has now been done. Quality assurance and sample splits were done with both DEQ and EPA. Through the five rounds of sampling, the numbers of concentration and pollution have varied, but the areas of high contamination have remained consistent.

At the north end of the plant site, groundwater to a depth of about 20 feet has concentrations of phenolics in the range of hundreds of milligrams per liter. Deeper wells, again at the north site about 28 to 40 feet deep, find concentrations of 2,4-D at about 50 milligrams per liter. Downgradiant wells between 44 and 55 feet find 1 to 2 milligrams per liter. A downgradiant well at 60 to 70 feet has concentrations up to 1 milligram per liter of phenolics. At the wells in the Gould property, very low levels or no detectable concentrations were found.

The company's wastewaters used to held in the old lake, north of the plant and the contaminants probably seeped into the ground water. Due to DEQ's concern about the potential migration of these contaminants to the river, the Willamette River was sampled in August of 1982 near the bank along the bottom both up and downstream from the site. They found no detectable levels. Additional sampling was conducted in August of 1983 with no detectable levels found. The Department will continue this sampling on a quarterly basis. At the Doane's Lake site, the biological treatment system is still in place. That is treating the surface waters . A mud-cat dredge has been utilized twice to mix the lake muds since they tend to absorb the contaminants.

Soil sampling in the plant area has found high concentrations of chlorinated phenolics. A deep well (302 feet deep) is located near Rhone-Poulenc, on the Liquid Air Products property. Two groundwater samples have been taken by DEQ. A sample taken in June, 1983 found no detectable limits of chlorinated phenolics, Silvex, or 2,4,5-T. It contained 22 parts per billion of 2,4-D. A sample taken in December of 1983 found no detectable limit of chlorinated phenolics, 2,4-D, or 2,4,5-T. It contained 9 parts per billion of Silvex. These levels are below the federal drinking water standards.

Groundwater samples are not showing any significant change in the magnitude of concentration. Additional sampling has shown pockets of high concentrations around the company site. They will now start to remove the highest concentrations at the north end of the plant site through a series of eight 12" wells down about 25 feet. They will be pumping out about 30,000 gallons per day and treating that through their existing carbon treatment system. The water will be pumped, treated, tested, and then discharged into the river, if it is within specific limits.

The groundwater withdrawal program is a long-term operation. As we view the results, the program may be expanded to 50 or 60 feet (Additional information is needed). In the future, we will continue our quarterly river sampling regarding the deeper aquifer and seek EPA's assistance in conducting a deep aquifer pump test.

Patterson noted, in regard to a question from Dr. Schade, the permeability of the soil is low, the material could be pooled in areas along the north side of the property and not be in equivalent concentrations throughout the rest of the aquifer.

Superfund

Rich Reiter then reviewed the status of Superfund sites in Oregon. He mentioned that through a special EPA grant, 44 additional sites will be investigated this year. Sixty percent of those are in the Portland area. The majority of those are plating firms or chemical distribution firms. That work will start February 1 and should take about a year. Reiter made a commitment to distribute progress reports on those inspections to the group. He then reviewed the status of the three Superfund NPL sites: Gould, Teledyne Wah Chang, and United Chrome. He discussed the reauthorization of the Superfund law.

Dr. Schade asked a question about Nu Way oil and Bispham responded with the DEQ's position. Bispham reviewed the status of the alleged contamination near Publisher's Mill in Molalla. Harry Edmonds of City of Portland requested a list of the platers which will be reviewed under Section 3014 for Superfund hazardous waste sites.

JAG:j
MJ317

DOANE'S LAKE

State and Local Briefing

January 30, 1984

NAME	AGENCY	ADDRESS
Harry Edmonds	City of Portland	
Kent Ashbaker	DEQ	
Charles Schade	Multnomah County	
Neil J. Mullane	DEQ	Portland, Oregon
Tom Bispham	DEQ	
Larry Patterson	DEQ	
Chuck Clinton	DEQ	
Richard Reiter	DEQ - Haz. Waste	
Steve Boedigheimer	Health Division	1400 SW Fifth, Portland
Art Keil	Health Division	1400 SW Fifth, Portland
William S. Bartholomew	Water Resources	555 13th Street SE, Salem
Gayla Reese	DEQ	

FD475

STATE OF OREGON

DEPARTMENT OF ENVIRONMENTAL QUALITY — INTEROFFICE MEMO

TO: Files — DATE: April 5, 1983

FROM: JAG

SUBJECT: City/County/State Meeting on Doane's Lake

Meeting was April 1, 1983, at DEQ headquarters. DEQ staff in attendance included Young, Bispham, Baesler, Patterson, Clinton, Reiter and Gillaspie. Others attending: Dr. Charlie Schade, Multnomah County Health Officer; City of Portland Public Works Staff, Gene Appel and Harry Edmonds; Water Resources Division Staff, Bill Bartholomew and Fred Lissner; Health Division Staff, Steve Boedigheimer, Dr. John A. Googin, and Kristine Gebbie.

Reiter opened the meeting by describing background material on the Superfund along with state activities to investigate uncontrolled hazardous waste sites around the state.

Bispham described the agency's work in investigating and developing cleanup plans for the Gould Battery Site on Front Avenue in Northwest Portland. Dr. Schade suggested that the staff do a calculation of the total lead concentration contained on the Gould site, along with the total lead which might have been released through the years from the site. He also suggested making a comparison between the amount of lead that comes from cars in the Portland airshed and the Gould Battery information to compare the amount of lead contained at the site to the number of cars that would equate to using leaded gasoline. Bispham discussed how the battery casings will be removed this year and how additional soil analysis is necessary by the company. They will have that conducted by Dames & Moore, a Seattle geologic consulting firm. Additional water samples are being taken by DEQ staff and will be analyzed within the next two weeks, looking for dissolved lead concentrations in the water.

Larry Patterson went on to describe the Department's efforts with Rhone-Poulenc. In 1943, the company was established as Chapman Chemical. In 1956, they started making the herbicide 2,4-D which involves the use of chlorinated phenols. Initially, process wastes along the storm runoff were discharged to the river directly or were discharged into Doane's Lake which discharges into the river. In the mid-1960's the Department received complaints from fishermen that salmon from the river near the plant were tainted with a chemical taste. That taste was chlorinated phenols. In 1969, at the Department's urging, the company installed carbonate towers which scrubbed out the chlorinated phenols, and we have not had complaints about tainted fish since then. In 1975, the company was issued an NPDES permit. At that time the company decided to treat their process water and discharge it to the City of Portland sewer system. It is a batch discharge. The waste water is collected, treated, and then released. The storm sewer discharge is addressed in the NPDES permit. The storm runoff is collected, held, treated, and there is again a batch discharge to the river. In the spring of 1980, the Department received complaints from railroad workers about chemical odors in the area of the S.P.&S. bridge. We did some testing and found 50 ppm of 2,4-Dichlorophenol in the area. We traced that problem to a sump leak at Rhodia. We required the company to clean Doane's Lake with hydrogen peroxide which removed the organics to trace levels. However, the chlorinated phenol concentrations started to rise immediately thereafter. We then required Rhodia to install shallow wells north of the plant where we found high concentrations of chlorinated phenols and began to suspect that the elevated levels of organics were due to past practices and a continual discharge of groundwater to the surface, that groundwater being contaminated with high levels of phenols. Department then worked with the company, Water Resources, and Dames & Moore to map out a total groundwater monitoring program in order to determine the extent of the chemical contamination. Groundwater is being monitored throughout the area. The deepest wells are sixty feet; some are very shallow, and others are located in the capillary zone of the groundwater. Our results have shown that chlorinated phenols are present throughout. At the railroad tracks, we have numbers that are less than .5 milligrams per liter; in the fill site behind the plant we are getting 10 to 30 milligrams per liter; and at the actual plant site, 40 to 50 milligrams per liter of chlorinated phenols along with some actual 2,4-D product.

Doane's Lake is now dammed and is not allowed to reach the river under the present NPDES permit. There is now a biological treatment system in place consisting of aerators and phenol-specific bacteria which consume the phenols and lower their concentrations. Under good conditions, the bacteria system can break down phenolic concentrations in a matter of days. This system is disconnected in very cold weather. In November of 1982, a new NPDES permit was issued.

The last phase of the groundwater monitoring study as outlined by the involved state agencies and the company's consultant is now being completed. The Department has conducted studies of phenolic compounds at the river's bank and have not found any detectable amounts. The detection limits would be about .001 parts per million. We do not believe there are any more leaks in the sumps; we believe they have been repaired. Under the company's present NPDES permit, the sumps and tank farms must be leak tested every six months; the sumps must be well maintained and pumped out regularly. All process lines have now been moved above ground. The company is no longer producing 2,4-D.

As they were digging one of the groundwater monitoring wells, the soil smelled heavily of chemicals. The company is now undertaking an extensive soil analysis. An area of about 100 x 150 - 200 feet is being sampled on 30-foot centers. Ten-foot wells are being sunk, and soils are being sampled at two, six, and ten feet for both metals and chlorinated phenolics. This sampling should be completed within the next two weeks.

Concentrations of chlorinated phenols above .03 milligrams per liter is the taste/odor sensitivity threshold. The hazardous waste standard for chlorinated phenols is .1 part per million.

Rich Reiter mentioned that the company had produced 2,4,5-T between 1958 and 1960. He stressed that the precursor chemical which is the chemical reaction that produces TCDD, a dioxin, was not manufactured there but was imported; but there might have been some spills of the chemical on-site. The Department does not think that is likely. There was a question as to whether TCDD tests had been run on the Rhone-Poulenc discharges. Reiter said no but that such tests could be ordered.

Gebbie asked what was the best method for the group to continue to be kept informed. The group decided that quarterly updates--adjusted to fit the schedule of what was happening--would be best.

JAG:k
FK1812

PERMITTEE NAME/ADDRESS (Include Facility Name/Location if different)

NAME K ERS MP IN

ADDRESS 1540 N.W. ST. HELENS ROAD

PORTLAND OREGON 97229

FACILITY

LOCATION MULTNOMAH COUNTY

NATIONAL POLLUTANT DISCHARGE ELIMINATION SYSTEM (NPDES)

DISCHARGE MONITORING REPORT (DMR)

(2-16) PERMIT NUMBER	(17-19) DISCHARGE NUMBER
OR-100011-9	001

MONITORING PERIOD

	YEAR	MO	DAY		YEAR	MO	DAY
FROM	86 (20-21)	1 (22-23)	1 (24-25)	TO	86 (26-27)	2 (28-29)	1 (30-31)

~~107~~ 3077-0 47430

Form Approved OMB No. 158-R0073

~~DPS~~ ~~GHG~~ ~~RCA~~

NOTE: Read instructions before completing this form.

PARAMETER (32-37)		QUANTITY OR LOADING (3 Card Only) AVERAGE (46-53)	MAXIMUM (54-61)	UNITS	QUALITY OR CONCENTRATION (4 Card Only) MINIMUM (38-45)	AVERAGE (46-53)	MAXIMUM (54-61)	UNITS	NO. EX (62-63)	FREQUENCY OF ANALYSIS (64-68)	SAMPLE TYPE (69-70)
FLOW	SAMPLE MEASUREMENT	3000 ✓		GPD						ESTIMATE	
	PERMIT REQUIREMENT		10,000								
TEMPERATURE	SAMPLE MEASUREMENT	56 ✓		F							
	PERMIT REQUIREMENT		100								
P.H.	SAMPLE MEASUREMENT					6.2 ✓				5 Per Grab	Week
	PERMIT REQUIREMENT				6.0		9.0			5 Per Grab	Week
OIL & GREASE	SAMPLE MEASUREMENT					1.0 Less Than ✓		MGL		1 Per Week	8 Hr Comp.
	PERMIT REQUIREMENT					10	15	MGL		1 Per Week	8 Hr Comp.
PHENOLS	SAMPLE MEASUREMENT					0.065 ✓		MGL		1 Per Week	8 Hr. Comp.
	PERMIT REQUIREMENT					0.5	0.7	MGL		1 Per Week	8 Hr Comp.
	SAMPLE MEASUREMENT										
	PERMIT REQUIREMENT										
	SAMPLE MEASUREMENT										
	PERMIT REQUIREMENT										

Dept. of Environmental Quality
RECEIVED
1986
NORTHWEST REGION

NAME/TITLE PRINCIPAL EXECUTIVE OFFICER

JOHN A. OXFORD
Plant Manager

TYPED OR PRINTED

THIS DOCUMENT IS SIGNED WITH RECOGNITION THAT KNOWINGLY MAKING A FALSE CERTIFICATION ON THIS REPORT OR SUPPORTING DOCUMENTS OR INTENTIONALLY TAMPERING WITH ANY MONITORING DEVICE OR METHOD ARE CRIMINAL OFFENSES. SEE 18 U.S.C. § 1001 AND 33 U.S.C. § 1319. *(Penalties under these statutes may be fines up to $10,000 and/or maximum imprisonment of between 6 months and 5 years.)*

(AO)

SIGNATURE OF PRINCIPAL EXECUTIVE OFFICER OR AUTHORIZED AGENT

TELEPHONE AREA CODE	NUMBER	DATE YEAR	MO	DAY
503	286-3681	86	2	18

COMMENT AND EXPLANATION OF ANY VIOLATIONS *(Reference all attachments here)*

EPA Form 3320-1 (Rev. 10-77) PREVIOUS EDITION TO BE USED UNTIL SUPPLY IS EXHAUSTED

(REPLACES EPA FORM T-40 WHICH MAY NOT BE USED.)

PAGE 1 OF 1

Koppers021981

STATE OF OREGON

INTEROFFICE MEMO

TO: Larry Patterson, WQ

DATE: January 23, 1985

FROM: Gregory D. Baesler, NWR

SUBJECT: WQ - Koppers Company, Inc.
Discharge Limitations
Multnomah County

The referenced company's NPDES permit is due to be renewed. In order to monitor the company's effluent for possible contamination by creosote, the Department's lab has suggested polyaromatic hydrocarbons be analyzed in the effluent. To complete the permit processing I need a discharge limitation for all or for each of the following:

Napthalene

Anthracene

Phenanthrene

Pyrene

Benz(a)Anthracene

Chrysene

Benz(a)Pyrene

Acenaphthene

Acenaphthylene

Fluorene

Fluoranthene

If you could provide some guidance on the limitations I should place in the permit it would be greatly appreciated.

GDB/emc

STATE OF OREGON
1859
VICTOR ATIYEH
GOVERNOR

Department of Environmental Quality

522 S.W. FIFTH AVENUE, BOX 1760, PORTLAND, OREGON 97207 PHONE (503) 229-5696

Dept. of Environmental Quality
RECEIVED
JUL 20 1984
NORTHWEST REGION

July 20, 1984

KOPPERS COMPANY, INC.
Attn: John Oxford, Terminal Manager
7540 NW St. Helens Rd.
Portland, OR 97229

Re: Renewal NPDES Application
File No. 47430
(Creosote Terminal)

Gentlemen:

Your application for renewal of your NPDES Waste Discharge Permit has been assigned application number OR-200077-9 and was accepted for filing on July 20, 1984. Your application has been assigned to the Northwest regional office for processing. Any questions regarding the status of your application should be directed to that office. If the Department has not requested additional information within 30 days of the filing date, your application shall be considered complete for processing.

If action is not completed on your renewal application by the expiration date of your present permit, your present permit will remain in effect until the final action is taken on your application.

Sincerely,

Charles K. Ashbaker
Supervisor
Source Control Section
Water Quality Division

CKA:jh
WG1272.B

cc: Northwest Region, DEQ

DEQ-1

Koppers021983

VICTOR ATIYEH
GOVERNOR

Department of Environmental Quality

522 S.W. FIFTH AVENUE, BOX 1760, PORTLAND, OREGON 97207 PHONE (503) 229-5696

July 18, 1984

CERTIFIED MAIL
RETURN RECEIPT REQUESTED

KOPPERS COMPANY, INC.
Attn: Paul W. Guth, Plant Superintendent
7540 NW St. Helens Road
Portland, OR 97229

Dept. of Environmental Quality
RECEIVED
JUL 19 1984
NORTHWEST REGION

NPDES Permit No. 3077-J
File No. 47430
(Creosote Terminal)

Gentlemen:

The Department of Environmental Quality notified you on May 30, 1984 of the upcoming expiration date of your National Pollutant Discharge Elimination System Permit. A renewal application was enclosed. We have not received your response.

If you feel that your situation has changed, perhaps making a permit unnecessary, please let us know immediately. Otherwise, we will appreciate receiving your application (another form enclosed) within the next ten days, as it takes several weeks to process an application.

If we do not hear from you within 30 days, we will assume no permit is wanted.

Fees in the amount of $200 must accompany the application.

If you have any questions about permit renewal procedures or fees, please contact me at 229-5325.

Very truly yours,

Charles K. Ashbaker
Supervisor
Source Control Section
Water Quality Division

CKA:mjb
Enclosure

cc: Northwest Region, DEQ

Koppers021984

U.S. ENVIRONMENTAL PROTECTION AGENCY

REGION X

1200 SIXTH AVENUE

SEATTLE, WASHINGTON 98101

Steve Bill Fisher

REPLY TO ATTN OF: M/S 533

CERTIFIED MAIL--RETURN RECEIPT REQUESTED

FEB 6 1984

CC Greg Baesler

L. L. Nagel, Vice President
Koppers Company, Incorporated
The Koppers Building
Pittsburg, Pennsylvania 15219

Dept. of Environmental Quality
RECEIVED
FEB 10 1984
NORTHWEST REGION

Re: Facility No. ORD050955848

Dear Mr. Nagel:

On November 19, 1980, you submitted a Part A Resource Conservation and Recovery Act (RCRA) permit application specifying that there was hazardous waste storage in waste piles at the Kopper's facility in Portland, Oregon. On June 22, 1983, you requested that your Part A be withdrawn and that your facility be considered as only a generator of hazardous waste.

To resolve these matters and to comply with your request we are formally requesting submission of the Part B portion of the application. This request is made under authority of 40 CFR Part 270.10(e)(4). Should your formal response to this request remain as you stated on June 22, 1983, we would proceed to process your termination of interim status and ensure that any applicable closure requirements are met in lieu of Part B issuance.

You will be contacted during the next 2 weeks for the purpose of setting up a meeting regarding the Part B application. At that time, we can discuss the permit program in detail and can answer specific questions that pertain to your facility. Should you still desire to withdraw your Part A, we can also discuss the ramifications of this decision as well as what information will be necessary to verify: that hazardous wastes were never created or disposed of at this site; that any hazardous waste storage complied with the applicable exemption rules specified in 40 CFR Parts 262.34 and 270.1; and that, therefore, formal closure would not be necessary.

Since this letter constitutes a formal request for your Part B application, I am obligated to include some information in case you should decide to remain in the RCRA system and receive a Part B permit. The Part B application requirements specified in 40 CFR Parts 270.14 through 270.21 reference other regulations such as Part 264. I have enclosed commercial reprints of 40 CFR Parts 264 and 270. This is the current available form of consolidated information. If copies of other regulations are needed, please make a specific request to this office.

The complete Part B portion of the application must be submitted to this office within 6 months of your receipt of this letter. Failure to comply with this time limit could result in the loss of interim status for existing hazardous waste management facilities and penalties under Section 3008 of RCRA up to $25,000 a day. While the regulations allow 6 months to complete the Part B portion of the application process we urge you to submit your application earlier if possible. If you submit any information under a claim of confidentiality please indicate this fact. Such claims must be substantiated as outlined in 40 CFR Part 2.

Both the Department of Environmental Quality (DEQ) and the Environmental Protection Agency (EPA) require permits for hazardous waste management facilities according to their respective regulations. In order to minimize the amount of paperwork for you, both agencies will work together to issue a joint permit. As you may already know, DEQ has expressed their intent to apply for authorization to administer a hazardous waste permit program in the State of Oregon in lieu of federally issued permits. When they recieve this authorization, they will be responsible for issuing all hazardous waste permits in the State. DEQ has indicated that the information required by EPA in 40 CFR 270.14 through 270.21 should satisfy all of the information requirements of the State except for completion of the DEQ land use compatibility form (Form DEQ 12-81). A copy of Form DEQ 12-81 is enclosed for completion and submittal with the Part B application to EPA.

Due to the wide variety of the types of hazardous waste recognized by EPA and the many unique treatment, storage, and disposal methods utilized, EPA has elected not to develop a Part B application form. We believe the reporting burden will be minimized by allowing the applicant to tailor the Part B application to the specific needs and requirements of the facility.

Since there is no rigid format for the Part B application, we are very willing to provide whatever assistance is necessary, both verbal and written, in order to ensure the submission of a complete and accurate document.

Through a joint effort we are confident that we can resolve this issue in a timely manner. We are looking forward to working with you.

Sincerely,

Alexandra B. Smith

Alexandra B. Smith, Director
Air & Waste Management Division

Enclosures

cc: Richard Reiter, DEQ
Al Goodman, OOO

Koppers

EFFLUENT TREATMENT FACILITIES

NORTHWEST TAR PLANT

Revised 1/27/65

Koppers021987

[illegible]

[illegible]

[illegible]

Process Wastes

Dehydration water and wet oil from the still are collected in tanks # 25 and # 10 respectively. Oil-free water is drained from these tanks to the existing adjacent sump, along with water from the pump room floor drains and the laboratory sink drains. An existing sump pump transfers the water to an 18 ft. diameter X 24 ft. high surge tank.

The surge tank is located next to a drain field which has been divided into three sections. Each section has a central ditch which feeds furrows spaced at right angles. Water is admitted to one end of the ditch through an 8" pipe line with a quick opening valve. When the valve is opened, the ditch fills and overflows into the furrows flooding the section.

The water then percolates through the soil and the BOD contributing compounds are consumed by soil bacteria. BOD reduction will exceed 90% the year round and will be well over 95% during the warm months.

Sanitary Wastes

Sanitary wastes are treated in two 1,000 gallon septic tanks. One tank, an existing one, handles the effluent from the main washroom. This area will contain 2 toilets, 1 urinal, 1 Bradley sink, 1 service sink, and 3 shower heads. The other septic tank handles waste from the office (2 toilets, 2 lavatories) and boiler house (1 toilet, 1 lavatory). Both septic tanks overflow into dry wells but could be piped into a city sewer which such a sewer is run adjacent to the plant.

Uncontaminated Wastes

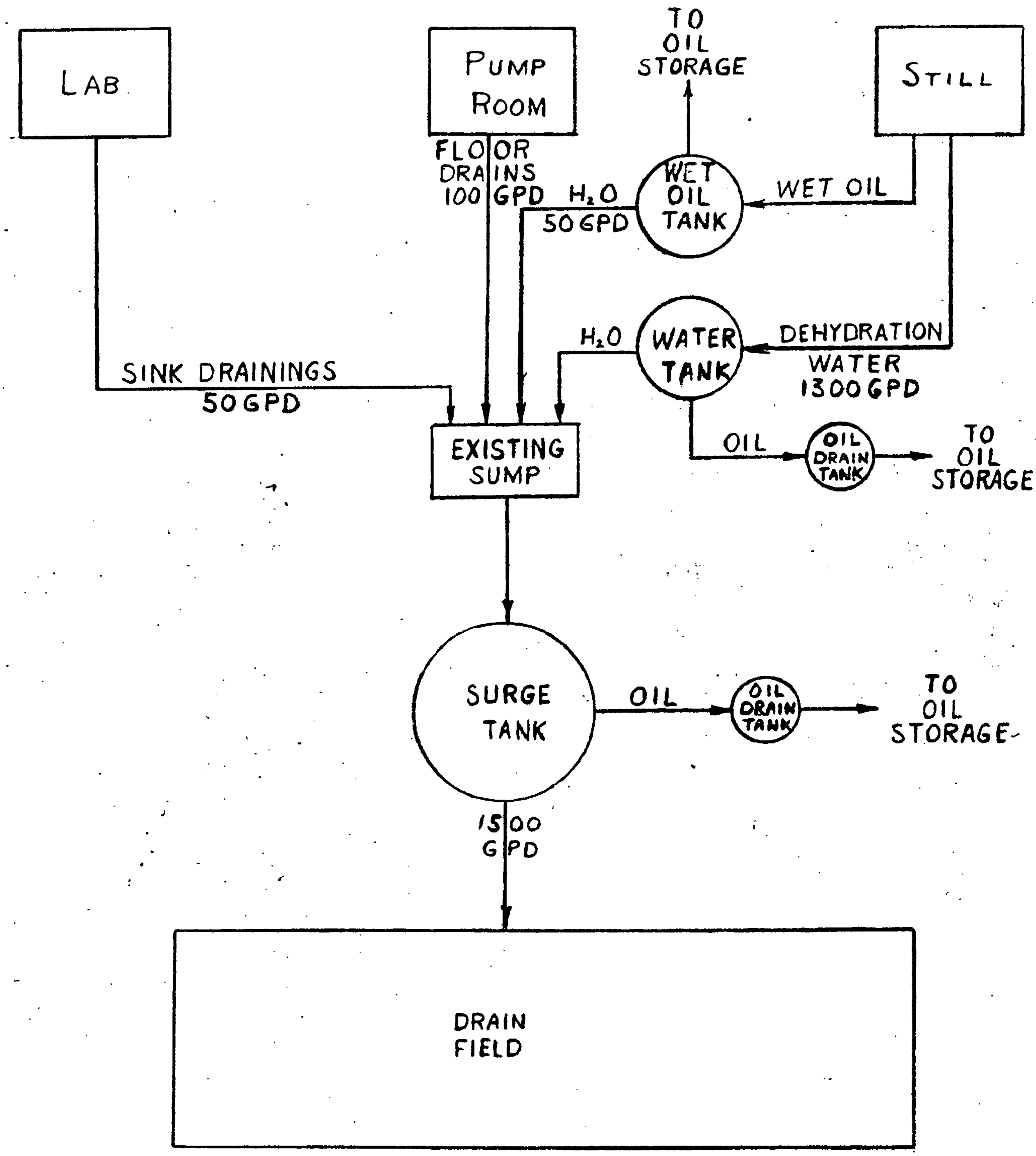
Indirect cooling will drain into an existing ditch leading to the river. City water will be used for cooling.

KOPPERS COMPANY, INC.
TAR PRODUCTS DIVISION
PITTSBURGH, PA.

THIS DRAWING AND ALL INFORMATION THEREON IS THE PROPERTY OF KOPPERS COMPANY, INC. TAR PRODUCTS DIVISION AND IS CONFIDENTIAL AND MUST NOT BE MADE PUBLIC OR COPIED UNLESS AUTHORIZED BY IT AND IS SUBJECT TO RETURN UPON DEMAND.

SKETCH SHEET

	NAME	DATE
DRAWN	R. L. SHANNON	1-27-66
CHECKED		



REV.	DESCRIPTION	CHKD. BY DATE

CONT: 300-1 NORTHWEST TAR PLANT

TITLE: BLOCK FLOW DIAGRAM - PROCESS WASTE DISPOSAL

F-2663-0

[illegible]

[illegible]

PORTLAND, OREGON

	Quantity		
Item 1 Tank T-23	1		Description - Dehydration Water Tank
		Purpose:	Collect dehydration water from the batch still.
		Service:	Intermittent
		Type:	Vertical, cylindrical
		Capacity:	20,000 gallons
		Size:	12' dia. x 24 ft. high
		Remarks:	Use existing tank from Portland Gas Works. Install oil drains
Item 2	1		Pumping Sump
		Purpose:	Collect water from the dehydration water tank, laboratory, floor drains and pump room.
		Service:	Continuous
		Type:	Open concrete pit
		Capacity:	520 gallons
		Size:	21'-10" long x 9'-4" wide x 11'-2" deep
		Remarks:	Existing
Item 3 Pumps P 401 P 402	1		Sump Pump
		Purpose:	Transfer water from the pumping sump to the effluent surge tank
		Service:	Intermittent
		Type:	Centrifugal
		Capacity:	30 gpm @ 100 ft., sp. gr. 1.0
		Construction:	All iron
		Remarks:	Existing Pacific Model SLO

Revised 1/27/56

Koppers021990

[illegible]	2		[illegible]
		Purpose:	Drive transfer pumps
		Service:	Intermittent
		Type:	Squirrel cage induction motor
		Size:	3 HP, 220/440 volt, 3 phase, 60 cycle.
		Remarks:	Existing
Item 5	2		Motor Starters
		Purpose:	Provide Across-the-line starting, & electrical disconnect for pump motors.
		Service:	Intermittent
		Type:	[illegible] 780 MHP-1 oil immersed, explosion-proof
		Size:	Frame 50
		Remarks:	Existing
Item 6	1		Effluent Surge Tank
		Purpose:	Collect one month's contaminated water ahead of effluent treatment facility.
		Service:	Continuous
		Type:	Vertical cylindrical
		Capacity:	44,000 gallons
		Size:	18"dia. x 24' high
		Nozzles:	Inlet 2 - 4" Vent 1 - 6" Gauge 1 - 6" Ra[illegible] 6 1-1/2" Outlet 2 8" Manways 2 - 20"
		Remarks:	[illegible] to API 650 - Use [illegible] tank from [illegible] Gas works. Add nozzles necessary.

Vessels
V-401
V-402

Purpose: [illegible]

Service: [illegible]

Type: Vertical, cylindrical, open [illegible]

Capacity: [illegible] gal.

Size: [illegible] dia. x [illegible] high

Construction: [illegible] carbon steel [illegible]

Item [illegible]
Pumps
P-403
P-404

Transfer Pumps

Purpose: [illegible]

Service: [illegible]

Type: Rotary

Capacity: 30 gpm. @ 50 psig., [illegible]

Construction: All iron

Item 9 [illegible]

Pump Motors

Purpose: Drive transfer pump

Service: [illegible]

Type: Squirrel cage induction motor

Size: [illegible] H.P., 220/440 volts, 3 phase, 60 cycles

Construction: Class I, Group D, [illegible]

Item 10 [illegible]

Motor Starters

Purpose: [illegible]

Service: [illegible]

Type: [illegible], explosion-proof

Size: [illegible]

[illegible]

Item 11. 1.

Drain Field

Purpose:	Provide irrigation area for soil percolation treatment of effluent
Service:	Continuous
Size:	3/4 acre, divided into 3 equal sections
Loading:	1500 gpd
Remarks:	Provide outer earth dike and plow distribution ditches and furrows.

Item 12 [illegible]

Well Points

Purpose:	Provide sample points for effluent leaving the percolation area (drain field)
Service:	Intermittent
Type:	1-6" dia. x 8' deep hole with pipe case
	1-6" dia. x 15' deep hole with pipe case
	Cases to be porous for bottom 2 feet.

Revised 1/[illegible]

January 20, 1966

Effluent Water Handling for Northwest Tar Plant at Portland, Oregon

I. Source of Tar Plant Process Waste Water

As described in the specifications for "Northwest Tar Plant Effluent Facilities," the process waste waters are largely a distillate overhead product from the distillation of tar. The water layer will be decanted to tank T-23 Dehydration Water Tank and this water will then be pumped to Tank T-28 Effluent Surge Tank - 44,000 gallon capacity.

II. Volume and Quality of Process Waste Water

Information obtained from other tar processing plants which are similar in operation to the proposed plant in Portland, Oregon, is used as a basis for estimating the volumes and characteristics of the effluent waters: These values are estimated to be:

		Low	High
Volumes - Gallons/day		1,200	1,800
Characteristics -			
pH		9.3	9.5
COD,	ppm	40,000	53,000
	#/day	400	795
BOD,	ppm	35,000	45,000
	#/day	350	675
Phenol,	ppm	12,000	15,000
	#/day	120	225
Sulfides,	ppm	2,500	5,000
	#/day	25	75

The volumes of these waste waters are kept at a minimum, however, they do have high pollution properties. By keeping the volume of waste water to a minimum, the pounds per day of pollutants are also kept to a minimum.

III. Process Waste Water Treatment

The Effluent Services Group of the Koppers Research Department at Monroeville has studied several treatment methods for handling these process waste waters. The most promising method being soil irrigation or soil percolation. The waste waters are also biodegradable using extended aeration.

A. Soil Irrigation and/or Soil Percolation

Based on extensive field tests, irrigating of plant process waste waters from other Koppers operations which had waters of high oxygen demand values and phenols, a high degree of reduction in oxygen demand values (over 95%) and near complete removal of phenols were obtained by this method of treatment. One of these field tests was operated in a plant near Pittsburgh, Pa. This test was operated for a full year, irrigating throughout the winter months. Runoff during thawing periods indicated a high percentage reduction in organics. With this background, tests were started in the laboratory and in 55-gallon drums set up outdoors to determine efficiency of soil percolation using tar plant process effluent waters.

1. Indoor Tests

Test units were set up indoors using glass soil percolation test units (Fisher Cat. No. 13-391) which had 2-1/2" of glass wool and gravel in the base. The diameter of the units above the gravel was 3" and with 15" depth of soils and sand the diameter at the top was 7". These units were started first with 53 ml of 1% phenol on weekdays and after about 3 weeks, the feed waters were switched to tar plant effluent. This rate of application is equivalent to 1500 gallons per 0.5 acre per day. At about this same time, distilled water equivalent to 1" of rain was added once a week to simulate outdoor conditions, also no water soaked through the unit up to this time. Results of these tests can be summarized as follows:

Feed Material

pH	9.3
COD, ppm	53,000
BOD, ppm	43,000
Phenols, ppm	14,500
Sulfides, ppm	2,700

Effluent Characteristics

Date, 1965	Unit 1(33% Garden Soil, 67% Sand) Phenols, ppm	Unit 1 Other Tests	Unit 2 (Coarse Plant Fill) Phenols, ppm	Unit 2 Other Tests
Sept. 1	Unit started on 1% phenol			
Sept. 15			Unit started on 1% phenol	
Sept. 28	Feeds switched to tar plant waste waters			
Oct. 4	.35		385	
Oct. 11	5.4		438	
Oct. 15	32		350	
Oct. 22	Started adding nutrients with the "rain water" each week			
Oct. 25	8.1		38	
Nov. 1	4.7		.4	
Nov. 8	6.9		0.1	
Nov. 15	2.7		2.4	
Nov. 17		pH 7.4 COD, ppm 116 BOD, ppm 34 Sulfides, ppm <0.1		pH 7.7 COD, ppm 470 BOD, ppm 195 Sulfides, ppm <0.1

January 20, 1966

Effluent Water Handling for Northwest Tar Plant at Portland, Oregon

Date, 1965	Phenols, ppm	Other Tests	Phenols, ppm	Other Tests
Nov. 22	16		3.2	
Nov. 26	<0.1		-	
Dec. 6	65		291	
Dec. 13	<0.2		59	
Dec. 20	<0.1		<0.1	
Dec. 27	37		6	
Jan. 19, 1966	10.5	COD, ppm 370	5.5	COD, ppm 345

Test percolation columns have also been operated for two months using dirt from the proposed Portland irrigation area; results to date indicate effluent from the units had phenols reduced to 5 to 95 ppm and COD is reduced to 300 to 1000 ppm.

2. Outdoor Tests

Three 55-gallon steel drums with open tops were set up outdoors at Monroeville. These units were filled with 7" gravel and 24" soil (1 part), and sand (2 parts). A connection from bottom of drum permitted collection of waters passing through this soil. Process effluent waters were then added at rates equivalent to 15,000, 7,500 and 1,500 gallons/day/0.5 acre. After about one week on the high rate unit, phenols were being removed by less than 50%, and on second unit,after two weeks of operation, phenol removal was less than 50%. These two units were then discontinued. At the lower rate of application, results were as follows:

Feed Material

pH	9.5
COD, ppm	5,600
Phenols, ppm	14,600
Sulfides, ppm	4,500

	Effluent Characteristics			Outdoor Conditions for past week		
				Air Temp., °F		Precipitation
Date 1965	Phenols, ppm	COD, ppm	Sulfides, ppm	High	Low	H_2O
Oct. 18	Feed to unit started					
Oct. 25	0.1	24	<0.1	71	26	1.0
Nov. 2	0.1	29	<0.1	55	18	0.1
Nov. 8	0.1	27	<0.1	58	38	0.6
Nov. 15	0.2	128	<0.1	52	23	0.3
Nov. 19	135	980	<0.1	45	29	1.0
Dec. 1	480	1800	<0.1	46	20	-
Dec. 13	1000	4250	<0.1	40	18	-
Dec. 22	1250	-	<0.1	46	15	Snow

Koppers021996

January 20, 1966

Effluent Water Handling for Northwest Tar Plant at Portland, Oregon

The steel drums started rusting badly the first of December and considerable iron was being carried through with the water, thus some of the COD value could be due to ferrous iron present. The units were discontinued before Christmas because of rusting of the drums. Several times in November and December, the effluent applied to soil surface would freeze and a thaw was required to percolate water through the unit.

Thus with greater depths of soil to percolate through or run over at the plant site, this method of waste water handling is expected to provide a high degree of removal for phenols and organic matter from the effluent waters.

B. Extended Aeration Process Effluent Treatment

Continuous flow type laboratory models of extended aeration activated sludge units have been operating on the process effluent waters diluted with about three parts of tap water. Units have been operated for over six weeks using fixed feeds with reductions of: phenol-100% ($<$0.1 ppm); sulfide-100% ($<$0.1 ppm); COD-82-96%; and BOD-95-99%. Several feed rates and other operating conditions were tested and these units were upset with loss of biological activity when feed conditions were varied rapidly. However, with fairly uniform operations, high organic reductions were shown. This method of operation would be Koppers Company's choice after soil percolation and irrigation, or being able to divert the effluent waters to a city sewer system.

IV. Sanitary Waste

Sanitary waste water will be provided with two septic tanks and dry wells or drain fields as outlined in the attached specifications.

V. Conclusions

It is believed that the process waste waters from the proposed tar plant can best be treated by use of soil percolation and irrigation as detailed in attached specifications "Effluent Treatment Facilities - Northwest Tar Plant." This is based on laboratory tests both indoors and outdoors using a tar plant process effluent water similar to that expected at Portland and on larger scale field testing of other Koppers plants' effluent waters. It is recommended that this method of process waste water treatment be installed at the Portland Plant.

Sanitary waste would be handled initially by septic tanks with dry wells or drain fields.

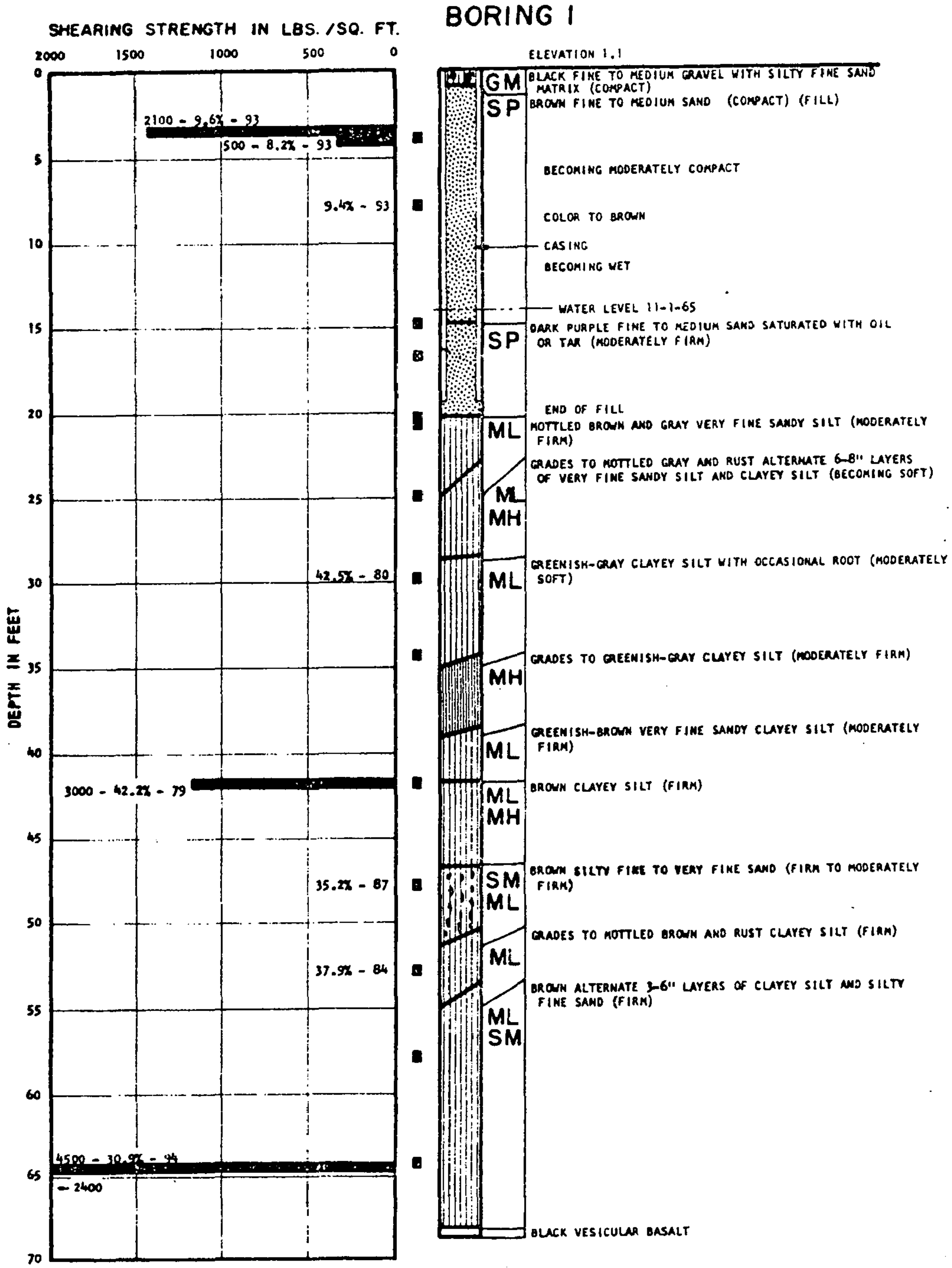
C. W. Fisher

C. W. Fisher

CWF:rtm

Koppers021997

SUB-SURFACE STRATA ADJACENT TO DRAIN FIELD



STATE OF OREGON

INTEROFFICE MEMO

TO: Leo Baton
Water Quality

DATE: 10 Nov 84

FROM: JAGillaspie
Northwest Region

SUBJECT: WQ - Koppers

The attached letter from Koppers was included with their NPDES monitoring forms for last month. In the future, it would be helpful if you could discuss permit exceedances with the appropriate staff person in our region prior to telling sources that going over allowable permit limits is acceptable.

It is important to have everyone in the Department that deals with a source to be on the same wave length, especially the field inspector who has the responsibility for the source.

cc: CKAshbaker
FMBolton done
GDBaesler

81-3-1387

Dept. of Environmental Quality
RECEIVED
NOV 5 1984
NORTHWEST REGION

KOPPERS

November 2, 1984

Department of Environmental Quality
Northwest Region
P.O. Box 1760
Portland, Oregon 97207

Dear Sirs:

Please note that the average of our oil and grease results from our samples show that we have exceeded the parameters of our permit. Attached, you will find copies of the laboratory reports showing that the two samples taken on October 23, 1984 and October 24, 1984, respectively, were indeed high. As you can also see, copies of two other samples taken during the month were within the parameters of our permit.

I have found no leak in our system that would put creosote oil into the effluent water. I have sampled water coming from the hillside above our plant down on to St. Helens Road and into our facility. The oil seems to be of an organic nature and quite possibly could be coming from septic tank systems from the homes above our facility. This oil is in the process of being analyzed and results will be forthcoming. May I point out at this time that if the oil was coming from our system the phenol count would also be extremely high. As you can see from the laboratory reports, this is not the case.

To insure that Koppers Company remains within the parameters of the permit that you have issued, we are now piping our system into a series of empty tanks. We will then pump the ground water into these tanks and hold that water until the laboratory assures us that we are in compliance with state regulations. Once we have received that assurance, we will then pump these tanks through our outfall #001 to the Willamette River. I feel that these steps will eliminate a repeat of this type of incident in the future.

At this time, please let me assure you that this incident was immediately reported to D.E.Q. by me personally. The man I spoke to at D.E.Q., Mr. Leo Boton, advised me at that time that even though we had exceeded the limit of our permit, that the nature was not that serious. He agreed with the steps I am taking to avoid this problem atain and asked that I advise D.E.Q. when the piping system is complete.

Thank you,

John A. Oxford

John A. Oxford
Plant Manager

Dept. of Environmental Quality
RECEIVED
NOV 1984
NORTHWEST REGION

KOPPERS

November 2, 1984

Department of Environmental Quality
Northwest Region
P.O. Box 1760
Portland, Oregon 97207

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Thank you,

John A. Oxford

John A. Oxford
Plant Manager

Koppers022001

STATE OF OREGON

INTEROFFICE MEMO

TO: Gary Calaba

DATE: August 27, 1984

FROM: CHGray, NWR

SUBJECT: HW - Koppers Co., Inc. - Multnomah County

The above company has been investigated previously under the abandoned hazardous waste disposal site inventory in 1982. We took one set of samples from the five groundwater monitoring wells in 1982 for phenols. The wells surround an area which up until ten years ago received waste coat tar distillates (see attached diagram).

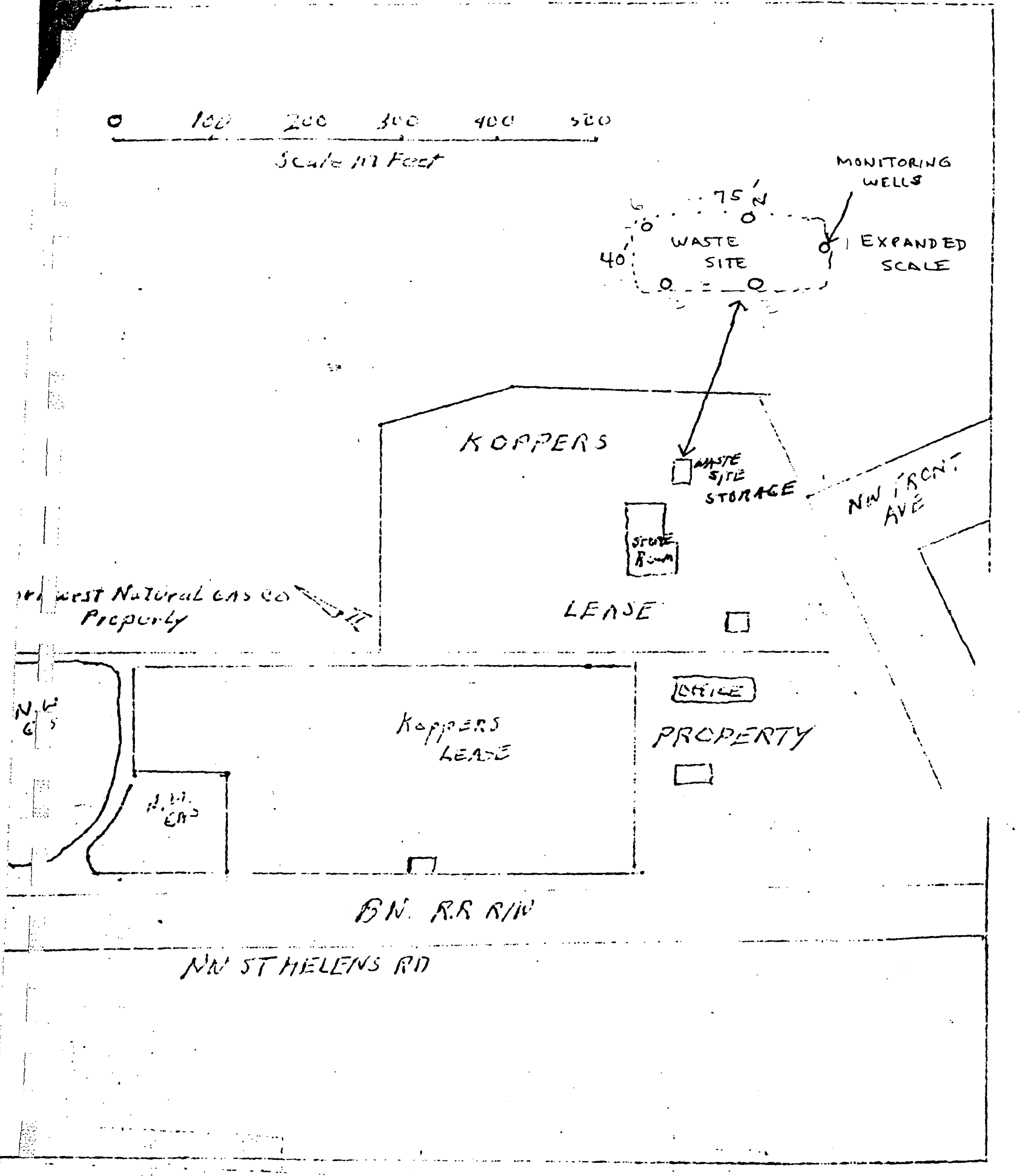
There was a benzene plant at this location which operated in the 1940's? The current company, Koppers, receives coal tar via rail cars and makes customized creosote blends for sale to wood treaters.

I'm not satisfied at this point to walk away from this facility. We need to do some more groundwater sampling and soil sampling. I will collect those samples this fall and provide a follow-up to this assessment. I intend to sample for a larger number of parameters than previously done in 1982.

CHG/mb
Attachment

125-1387

Y DRAWING


0 100 200 300 400 500
Scale in Feet
MONITORING WELLS
75
N
40
WASTE SITE
EXPANDED SCALE
KOPPERS
WASTE SITE STORAGE
NW FRONT AVE
LEASE
Northwest Natural Gas Co Property
OFFICE
Koppers LEASE
PROPERTY
BN. R.R R/W
NW ST HELENS RD

Request for Analysis

Laboratory No. 82-0408

Location/Site: KOPPERS Co. INC. Date: 7/19/82 Date Received Lab: JUL 19 1982

Collected By: GDBAESLER c/o MARK HOPE Program: WQ/HW-3150 4284 Date Reported: 8-11-82

Purpose: ABANDON SITE SURVEY Report Data To: ~~GDB~~ HWD

Comments:

HW- via Mark Hope advised that the impoundment is to be included in area wide study

Item No.	Description	Basic Nutrients	DO BOD	Metals Organic		Test Required
1	MONITORING WELL 1				X129	OIL, GREASE, PHENOL, TOTAL
2	" " 2				X248	SAME
3	" " 3				X157	SAME
4	" " 5				G012	SAME
5	MIDDLE POND NWNG				X247	SAME

Dept. of Environmental Quality RECEIVED AUG 12 1982 NORTHWEST REGION

* Basic - Unpreserved sample; Nutrient - Preserve with H_2SO_4

Metals - HNO_3 added in Laboratory do not rinse; Organic - Laboratory prepared Mason Jar

Koppers022004

3150 B

Copy
L Pa
G Baesler
NWR

DEPARTMENT OF ENVIRONMENTAL QUALITY
Laboratory Data Sheet

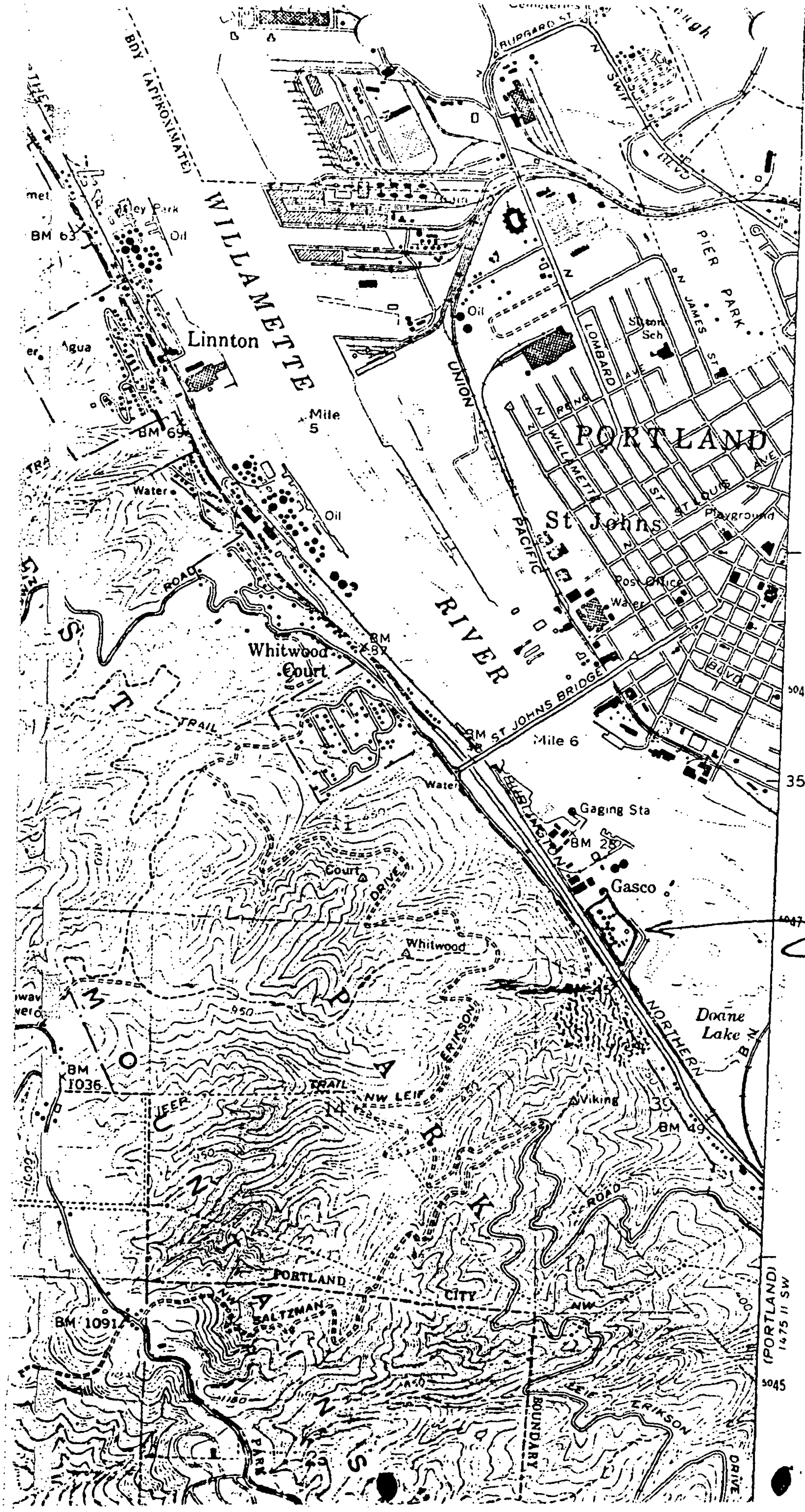
Laboratory No. 82-0404
Page: 1 of: 1
Analysis Completed: 2 Aug 82

KOPPER'S CO, INC. G. BAESLER

Item No.	Bottle #	O+G *	Phenol	Pb *								
	Test Results (All units in mg/l or ug/m3)											
1	X129		0.59									
2	X248		24.									
3	X157		0.12									
4	G012		0.44									
5	X247		0.51									

Comments: * Not enough samples to run oil & grease - Bottles washed after phenol analysis Keto

Koppers022005



ORD 027734359
Koppers Company Inc
Portland OR

EPA

POTENTIAL HAZARDOUS WASTE SITE PRELIMINARY ASSESSMENT
PART 1 - SITE INFORMATION AND ASSESSMENT

I. IDENTIFICATION
01 STATE | 02 SITE NUMBER

II. SITE NAME AND LOCATION

01 SITE NAME (Legal, common, or descriptive name of site): KOPPERS COMPANY, INC.	02 STREET, ROUTE NO., OR SPECIFIC LOCATION IDENTIFIER: 7540 N.W. ST. HELENS RD.			
03 CITY: PORTLAND	04 STATE: OR	05 ZIP CODE: 97229	06 COUNTY: MULTNOMAH	07 COUNTY CODE / 08 CONG DIST
09 COORDINATES LATITUDE __ __ __.__ LONGITUDE ___ __ __.__				
10 DIRECTIONS TO SITE (Starting from nearest public road)				

III. RESPONSIBLE PARTIES

01 OWNER (If known): NW NATURAL GAS CO.	02 STREET (Business, mailing, residential): 202 N.W. 2nd AVE.		
03 CITY: PORTLAND	04 STATE: OR	05 ZIP CODE: 97209	06 TELEPHONE NUMBER: (503) 226-4211
07 OPERATOR (If known and different from owner): KOPPERS COMPANY, INC	08 STREET (Business, mailing, residential): SAME AS ABOVE		
09 CITY	10 STATE	11 ZIP CODE	12 TELEPHONE NUMBER ( )

13 TYPE OF OWNERSHIP (Check one)
☒ A. PRIVATE ☐ B. FEDERAL: ________ (Agency name) ☐ C. STATE ☐ D. COUNTY ☐ E. MUNICIPAL
☐ F. OTHER: ________ (Specify) ☐ G. UNKNOWN

14 OWNER/OPERATOR NOTIFICATION ON FILE (Check all that apply)
☐ A. RCRA 3001 DATE RECEIVED: __/__/__ MONTH DAY YEAR ☐ B. UNCONTROLLED WASTE SITE (CERCLA 103 c) DATE RECEIVED: __/__/__ MONTH DAY YEAR ☐ C. NONE

IV. CHARACTERIZATION OF POTENTIAL HAZARD

01 ON SITE INSPECTION
☒ YES DATE 6 / 19 / 84 (MONTH DAY YEAR)
☐ NO

BY (Check all that apply)
☐ A. EPA ☐ B. EPA CONTRACTOR ☒ C. STATE ☐ D. OTHER CONTRACTOR
☐ E. LOCAL HEALTH OFFICIAL ☐ F. OTHER: ________ (Specify)
CONTRACTOR NAME(S): ________

02 SITE STATUS (Check one)
☐ A. ACTIVE ☒ B. INACTIVE ☐ C. UNKNOWN

03 YEARS OF OPERATION
BEGINNING YEAR | ENDING YEAR ☐ UNKNOWN

04 DESCRIPTION OF SUBSTANCES POSSIBLY PRESENT, KNOWN, OR ALLEGED
DISTILLATES OF COAL TAR; CREOSOTE, PHENOLS

05 DESCRIPTION OF POTENTIAL HAZARD TO ENVIRONMENT AND/OR POPULATION
LOW POTENTIAL HAZARD TO THE ENVIRONMENT AND THE PUBLIC. LOCATION DOES NOT POSE THREAT TO MUNICIPAL WATER SOURCE.

V. PRIORITY ASSESSMENT

01 PRIORITY FOR INSPECTION (Check one. If high or medium is checked, complete Part 2 - Waste Information and Part 3 - Description of Hazardous Conditions and Incidents)
☐ A. HIGH (Inspection required promptly) ☐ B. MEDIUM (Inspection required) ☒ C. LOW (Inspect on time available basis) ☐ D. NONE (No further action needed, complete current disposition form)

VI. INFORMATION AVAILABLE FROM

01 CONTACT: JOHN OXFORD	02 OF (Agency/Organization): KOPPERS COMPANY, INC		03 TELEPHONE NUMBER: (503) 286-3681
04 PERSON RESPONSIBLE FOR ASSESSMENT: CHARLES GRAY	05 AGENCY: DEQ	06 ORGANIZATION: STATE OF OR	07 TELEPHONE NUMBER: (503) 229-5288
08 DATE: 7 / 31 / 84 (MONTH DAY YEAR)			

EPA FORM 2070-12 (7-81)

EPA

POTENTIAL HAZARDOUS WASTE SITE PRELIMINARY ASSESSMENT
PART 2 - WASTE INFORMATION

I. IDENTIFICATION	
01 STATE	02 SITE NUMBER

. WASTE STATES, QUANTITIES, AND CHARACTERISTICS

01 PHYSICAL STATES *(Check all that apply)*

- ☐ A. SOLID
- ☐ B. POWDER, FINES
- ☐ C. SLUDGE
- ☐ D. OTHER ________ *(Specify)*
- ☐ E. SLURRY
- ☐ F. LIQUID
- ☐ G. GAS

02 WASTE QUANTITY AT SITE *(Measures of waste quantities must be independent)*

TONS ________

CUBIC YARDS ________

NO. OF DRUMS ________

03 WASTE CHARACTERISTICS *(Check all that apply)*

- ☐ A. TOXIC
- ☐ B. CORROSIVE
- ☐ C. RADIOACTIVE
- ☐ D. PERSISTENT
- ☐ E. SOLUBLE
- ☐ F. INFECTIOUS
- ☐ G. FLAMMABLE
- ☐ H. IGNITABLE
- ☐ I. HIGHLY VOLATILE
- ☐ J. EXPLOSIVE
- ☐ K. REACTIVE
- ☐ L. INCOMPATIBLE
- ☐ M. NOT APPLICABLE

II. WASTE TYPE

CATEGORY	SUBSTANCE NAME	01 GROSS AMOUNT	02 UNIT OF MEASURE	03 COMMENTS
SLU	SLUDGE			
OLW	OILY WASTE			
SOL	SOLVENTS			
PSD	PESTICIDES			
OCC	OTHER ORGANIC CHEMICALS			
IOC	INORGANIC CHEMICALS			
ACD	ACIDS			
BAS	BASES			
MES	HEAVY METALS			

IV. HAZARDOUS SUBSTANCES *(See Appendix for most frequently cited CAS Numbers)*

01 CATEGORY	02 SUBSTANCE NAME	03 CAS NUMBER	04 STORAGE/DISPOSAL METHOD	05 CONCENTRATION	06 MEASURE OF CONCENTRATION

V. FEEDSTOCKS *(See Appendix for CAS Numbers)*

CATEGORY	01 FEEDSTOCK NAME	02 CAS NUMBER	CATEGORY	01 FEEDSTOCK NAME	02 CAS NUMBER
FDS			FDS		
FDS			FDS		
FDS			FDS		
FDS			FDS		

VI. SOURCES OF INFORMATION *(Cite specific references, e.g., state files, sample analysis, reports)*

SITE VISIT; INTERVIEW WITH JOHN OXFORD; SAMPLE ANALYSIS; DEQ FILES.

EPA FORM 2070-12 (7-81)

EPA

POTENTIAL HAZARDOUS WASTE SITE PRELIMINARY ASSESSMENT
PART 3 - DESCRIPTION OF HAZARDOUS CONDITIONS AND INCIDENTS

I. IDENTIFICATION	
01 STATE	02 SITE NUMBER

II. HAZARDOUS CONDITIONS AND INCIDENTS *(Continued)*

01 ☐ J. DAMAGE TO FLORA — 02 ☐ OBSERVED (DATE: ________) ☐ POTENTIAL ☐ ALLEGED
04 NARRATIVE DESCRIPTION

01 ☐ K. DAMAGE TO FAUNA — 02 ☐ OBSERVED (DATE: ________) ☐ POTENTIAL ☐ ALLEGED
04 NARRATIVE DESCRIPTION *(include name(s) of species)*

01 ☐ L. CONTAMINATION OF FOOD CHAIN — 02 ☐ OBSERVED (DATE: ________) ☐ POTENTIAL ☐ ALLEGED
04 NARRATIVE DESCRIPTION

01 ☐ M. UNSTABLE CONTAINMENT OF WASTES *(Spills/runoff/standing liquids/leaking drums)* — 02 ☐ OBSERVED (DATE: ________) ☐ POTENTIAL ☐ ALLEGED
03 POPULATION POTENTIALLY AFFECTED: ________ 04 NARRATIVE DESCRIPTION

01 ☐ N. DAMAGE TO OFFSITE PROPERTY — 02 ☐ OBSERVED (DATE: ________) ☐ POTENTIAL ☐ ALLEGED
04 NARRATIVE DESCRIPTION

01 ☐ O. CONTAMINATION OF SEWERS, STORM DRAINS, WWTPs — 02 ☐ OBSERVED (DATE: ________) ☐ POTENTIAL ☐ ALLEGED
04 NARRATIVE DESCRIPTION

01 ☐ P. ILLEGAL/UNAUTHORIZED DUMPING — 02 ☐ OBSERVED (DATE: ________) ☐ POTENTIAL ☐ ALLEGED
04 NARRATIVE DESCRIPTION

05 DESCRIPTION OF ANY OTHER KNOWN, POTENTIAL, OR ALLEGED HAZARDS

III. TOTAL POPULATION POTENTIALLY AFFECTED: ________

IV. COMMENTS

V. SOURCES OF INFORMATION *(Cite specific references, e. g., state files, sample analysis, reports)*

COFFEY LABORATORIES, INC.
4914 N.E. 122nd Ave.
Portland, OR 97230

June 7, 1984

Koppers Company
7540 N.W. St. Helens Road
Portland, Oregon 97229

Attention: John Oxford

Sample received: May 18, 1984

Analyses requested: Oil and Grease, Phenols, and pH

RECEIVED
JUN 11 1984
KOPPERS CO., INC.
INDUSTRIAL PRODUCTS DIV.
PORTLAND, OREGON

ANALYSIS	RESULTS
Phenols	0.43 mg/l
Oil and Grease*	83.3 mg/l
pH	6.65 S.U.

* This analysis was done according to Standard Methods Method 502-A, Partition-Gravimetric Method. The weight in the tared flask at the end of the analysis appeared to be a cresol-like substance, and not grease and oil.

Sincerely,

Susan M. Coffey

Susan M. Coffey,
President

SMC/db

NWR

STATE OF OREGON 1859
VICTOR ATIYEH GOVERNOR

Department of Environmental Quality

522 S.W. FIFTH AVENUE, BOX 1760, PORTLAND, OREGON 97207 PHONE (503) 229-5696

May 30, 1984

Dept. of Environmental Quality
RECEIVED
MAY 3)
NORTHWEST REGION

KOPPERS COMPANY, INC.
Attention: Paul W. Guth, Plant Superintendent
7540 NW St. Helens Road
Portland, OR 97229

Re: Permit 3077-J
File No. 47430
(Creosote Terminal)

Gentlemen:

Our records indicate that your present waste water disposal permit will expire on November 30, 1984.

The enclosed application form must be completed, signed by your responsible official and returned to the Department of Environmental Quality as soon as possible for permit renewal.

A filing fee of $50 and a processing fee of $ 150 are required to accompany this application. No action can be taken on the application until the fees are paid.

If you request a significant increase in effluent discharge or disposal limitations, the processing fee will be $ 250.

If you have any questions regarding the renewal application or the associated fees, please contact this office. An invoice for the amount of the fees will be sent to you upon request. Copies of the permit fee regulations are attached.

Sincerely,

for Charles K. Ashbaker
Supervisor
Source Control Section
Water Quality Division

CKA:mjb
Enclosures (2)

cc: Northwest Region, DEQ

DEQ-1

Koppers022011

ENVIRONMENTAL PROTECTION AGENCY

REGION X

1200 SIXTH AVENUE

SEATTLE, WASHINGTON 98101

Steve Bill

REPLY TO ATTN OF: M/S 533

CERTIFIED MAIL--RETURN RECEIPT REQUESTED

FEB 6 1984

cc Greg Baesler

Dept. of Environmental Quality
RECEIVED
FEB 10 1984
NORTHWEST REGION

L. L. Nagel, Vice President
Koppers Company, Incorporated
The Koppers Building
Pittsburg, Pennsylvania 15219

Re: Facility No. ORD050955848

Dear Mr. Nagel:

On November 19, 1980, you submitted a Part A Resource Conservation and Recovery Act (RCRA) permit application specifying that there was hazardous waste storage in waste piles at the Kopper's facility in Portland, Oregon. On June 22, 1983, you requested that your Part A be withdrawn and that your facility be considered as only a generator of hazardous waste.

To resolve these matters and to comply with your request we are formally requesting submission of the Part B portion of the application. This request is made under authority of 40 CFR Part 270.10(e)(4). Should your formal response to this request remain as you stated on June 22, 1983, we would proceed to process your termination of interim status and ensure that any applicable closure requirements are met in lieu of Part B issuance.

You will be contacted during the next 2 weeks for the purpose of setting up a meeting regarding the Part B application. At that time, we can discuss the permit program in detail and can answer specific questions that pertain to your facility. Should you still desire to withdraw your Part A, we can also discuss the ramifications of this decision as well as what information will be necessary to verify: that hazardous wastes were never treated or disposed of at this site; that any hazardous waste storage complied with the applicable exemption rules specified in 40 CFR Parts 262.34 and 270.1; and that, therefore, formal closure would not be necessary.

Since this letter constitutes a formal request for your Part B application, I am obligated to include some information in case you should decide to remain in the RCRA system and receive a Part B permit. The Part B application requirements specified in 40 CFR Parts 270.14 through 270.21 reference other regulations such as Part 264. I have enclosed commercial reprints of 40 CFR Parts 264 and 270. This is the current available form of consolidated information. If copies of other regulations are needed, please make a specific request to this office.

VICTOR ATIYEH
GOVERNOR

Department of Environmental Quality

522 S.W. 5th AVENUE, BOX 1760, PORTLAND, OREGON 97207

March 18, 1983

Koppers Company, Inc.
7540 N.W. St. Helens Road
Portland, Oregon 97229

Re: HW - Koppers Company, Inc.
ORD 027734357
Multnomah County

Dear Mr. Rassi:

Enclosed please find a copy of the site inspection report of the inspection conducted on March 10, 1983. Please review the report and indicate any items you feel should be added, deleted or changed.

If you have any questions, please feel free to call me at 229-5296.

Sincerely,

G Baesler

Gregory D. Baesler
Environmental Analyst
Northwest Region

GDB/emc
Enclosure

Ho [illegible]

STATE OF OREGON

INTEROFFICE MEMO

Koppers file

HMI

TO: Bill, Fred, Steve

DATE: March 21, 1983

FROM: Rich Reiter, Supervisor Richard P. Reiter

file ē inspection report

SUBJECT: Koppers Co., Inc. —
7540 N.W. St. Helens Road
Portland, OR
ORD 027734359

Dept. of Environmental Quality
RECEIVED
MAR 22 1983
NORTHWEST REGION

On 3-10-83, Al Goodman, EPA-OOO, Greg Baesler and I met with Henry Rassi of Koppers to discuss their status as RCRA TSD facility. Kopper's principal product at this plant is the blending of various cresote products that are brought in by railcar to make a saleable product for the wood preserving industry.

No hazardous wastes are routinely produced by this plant. The purpose for the Part A filing was to attain status if it became necessary to store spilled commercial chemical product (U051) longer than 90 days.

On 3-9-83, Jordan Dern of Koppers corporate offices (Pennsylvania) visited Arlington and was apparently convinced that that site could receive spilled U051 in less than 90 days.

Henry Rassi understood that Jordan Dern would be filing an amended notification requesting generator status only.

Conclusion: Koppers is clearly a small quantity generator (if that) and does not accumulate more than 2000 lbs. and store it for longer than 90 days.

RPR:m
cc Greg Baesler, NWR-DEQ
Al Goodman, EPA-OOO
Dave Hanline, EPA-Region 10

Contains Recycled Materials
91-125-1387

The complete Part B portion of the application must be submitted to this office within 6 months of your receipt of this letter. Failure to comply with this time limit could result in the loss of interim status for existing hazardous waste management facilities and penalties under Section 3008 of RCRA up to $25,000 a day. While the regulations allow 6 months to complete the Part B portion of the application process we urge you to submit your application earlier if possible. If you submit any information under a claim of confidentiality please indicate this fact. Such claims must be substantiated as outlined in 40 CFR Part 2.

Both the Department of Environmental Quality (DEQ) and the Environmental Protection Agency (EPA) require permits for hazardous waste management facilities according to their respective regulations. In order to minimize the amount of paperwork for you, both agencies will work together to issue a joint permit. As you may already know, DEQ has expressed their intent to apply for authorization to administer a hazardous waste permit program in the State of Oregon in lieu of federally issued permits. When they recieve this authorization, they will be responsible for issuing all hazardous waste permits in the State. DEQ has indicated that the information required by EPA in 40 CFR 270.14 through 270.21 should satisfy all of the information requirements of the State except for completion of the DEQ land use compatibility form (Form DEQ 12-81). A copy of Form DEQ 12-81 is enclosed for completion and submittal with the Part B application to EPA.

Due to the wide variety of the types of hazardous waste recognized by EPA and the many unique treatment, storage, and disposal methods utilized, EPA has elected not to develop a Part B application form. We believe the reporting burden will be minimized by allowing the applicant to tailor the Part B application to the specific needs and requirements of the facility.

Since there is no rigid format for the Part B application, we are very willing to provide whatever assistance is necessary, both verbal and written, in order to ensure the submission of a complete and accurate document.

Through a joint effort we are confident that we can resolve this issue in a timely manner. We are looking forward to working with you.

Sincerely,

Alexandra B. Smith

Alexandra B. Smith, Director
Air & Waste Management Division

Enclosures

cc: Richard Reiter, DEQ
Al Goodman, OOO

PAI ENT EN ONI TAL AL

SOURCE INSPECTION FORM

HENRY RASSI - 5863681

☐ WQ
☐ SW
☐ AQ
☐ NC

COUNTY: MULT

SOURCE NAME: KOPPERS CO. INC

SOURCE ADDRESS: 7540 NW ST HELENS RD. PORTLAND

OFFICIAL CONTACTED: HENRY RASSI, TERM. SUPT.

FILE 47430

PERMIT NUMBER CO.	PERMIT NUMBER SOURCE	POINT	ACTION NO.	ACTION TYPE	DATE SCHEDULED MO. DAY YR.	DATE ACHIEVED MO. DAY YR.	RESULT	INSPEC. NO.
	3077J			7		10 11 82	X	F04

TABLE A PARA	PREP. TIME	TRANS TIME	INSPECTION TIME	PAPER TIME
	0.8	0.6	.8	.4

8 1

8 2

8 3

8 4

COMPLIANCE STATUS (RESULT CODE)	IN COMP.	NOT IN COMPLIANCE	ON SCHEDULE
All permit conditions	Q ✓		
Permit emission limits	R	A	I
Emission standards	S	B	J
Performance reqts.	T	C	K
Monitoring & Reporting	U	D	L
Open burning limits	V	E	M
Procedural Reqts.	W	F	N
Fugitive emissions	X	G	O
Other	Y	H	P

SOURCES IN VIOLATION & LIMITS VIOLATED

TREATMENT/PROCESS EQUIPMENT — ADDITIONAL REMARKS — OPERATING CONDITIONS

CONDENSATE RETURN LINE IN TANK FARM LEAKS AND SHOULD BE REPAIRED AND ELEVATED.

OUTFALL NO. 2 NOW CONNECTED TO OUTFALL NO. 1

NO FLOW AT OUTFALL NO. 1 DURING INSPECTION

Henry M. [signature] 10/11/82

SIGNATURE OF INSPECTOR AND DATE

REGION COPY

Henry S. Rassi 10/11/82

SIGNATURE OF PERSON INTERVIEWED AND DATE

DEQ/RO-101 (4/80)

Koppers022016

DEPARTMENT OF ENVIRONMENTAL QUALITY
Request for Analysis

Laboratory No. 82-1497

Location/Site: KOPPERS CO. INC. Date: 7/19/82 Date Received Lab: JUL 19 RECD

4284

Collected By: GD BAESLER & MARK HOPE Program: WQ/HW-3150B Date Reported: 8-11-82

Purpose: ABANDON SITE SURVEY Report Data To: ~~GDB~~ HW/D

Comments:

HW - via Mark Hope advised that this impoundment is to be included in area under study

Item No.	Description	Sample Containers * Basic Nutrients	DO BOD	Metals Organic		Test Required
1	MONITORING WELL 1				X129	OIL, GREASE, PHENOL, TOTAL N
2	" " 2				X248	SAME
3	" " 3				X157	SAME
4	" " 5				G012	SAME
5	MIDDLE POND NWNG				X247	SAME

Dept. of Environmental Quality RECEIVED AUG 12 1982 NORTHWEST REGION

* Basic - Unpreserved sample; Nutrient - Preserve with H_2SO_4

Metals - HNO_3 added in Laboratory do not rinse; Organic - Laboratory prepared Mason Jar

Koppers022017

Copy to L Parker G Baesler NWR

250

DEPARTMENT OF ENVIRONMENTAL QUALITY
Laboratory Data Sheet

Laboratory No. 82-0404
Page: 1 of: 1
Analysis Completed: 2 Aug 82

Koppers CO, INC. G. BAESLER

Test Results (All units in mg/l or ug/m^3)

Item No.	Bottle #	O+G *	Phenol	Pb *
1	X129		0.59	
2	X248		24.	
3	X157		0.12	
4	G012		0.44	
5	X247		0.51	

Comments: * Not enough samples to run oil & grease – Bottles washed after phenol analysis per Kehr

Koppers022018

DEPARTMENT OF ENVIRONMENTAL QUALITY

SOURCE INSPECTION FORM

~~WQ~~ ~~SW~~ ☐ AQ ☐ NC

COUNTY: Mult.

SOURCE NAME: Koppers Co

SOURCE ADDRESS: 7540 NW St Helens Rd

OFFICIAL CONTACTED: Henry Rassin

TABLE A PARA	PREP. TIME	TRANS TIME	INSPECTION TIME	PAPER TIME
	2	3	5	1

PERMIT NUMBER CO.	SOURCE	POINT	ACTION NO.	TYPE	DATE SCHEDULED MO. DAY YR.	DATE ACHIEVED MO. DAY YR.	RESULT	INSPEC. NO.
26	30775	000	047	07		120781	Q	B03

81 IN Compliance

82

83

84

COMPLIANCE STATUS (RESULT CODE)	IN COMP	NOT IN COMPLIANCE	ON SCHEDULE
All permit conditions	~~Q~~		
Permit emission limits	R	A	I
Emission standards	S	B	J
Performance reqts.	T	C	K
Monitoring & Reporting	U	D	L
Open burning limits	V	E	M
Procedural Reqts.	W	F	N
Fugitive emissions	X	G	O
Other	Y	H	P

SOURCES IN VIOLATION & LIMITS VIOLATED

TREATMENT/PROCESS EQUIPMENT – ADDITIONAL REMARKS – OPERATING CONDITIONS

Water Sample Taken of
001 Discharge 47°F 7.8 PH

002 DISCHARGE Discontinued

Water around plant clean

R H Dykm 12/7/81
SIGNATURE OF INSPECTOR AND DATE

REGION COPY

Henry E Rassin
SIGNATURE OF PERSON INTERVIEWED AND DATE

DEQ/RO-101 (4/80)

Koppers022019

DEPARTMENT OF ENVIRONMENTAL QUALITY
SOURCE INSPECTION FORM

~~TAB~~ ~~GRR~~ IRB

- [ ] WQ
- [ ] SW
- [x] AQ
- [ ] NC

COUNTY: Mult.

SOURCE NAME: Koppers Co.

SOURCE ADDRESS: 7540 NW ST Helens Rd

OFFICIAL CONTACTED: Henry Rassi

TABLE A PARA	PREP. TIME	TRANS TIME	INSPECTION TIME	PAPER TIME
58B	.2	.3	.5	.2

PERMIT NUMBER CO.	SOURCE	POINT	ACTION NO.	TYPE	DATE SCHEDULED MO. DAY YR.	DATE ACHIEVED MO. DAY YR.	RESULT	INSPEC. NO.
26	2930	001	997	07		120781	Q	B03

8 1 1-Boiler ~~2~~ 20,000 #/hr capacity in compliance
8 2
8 3
8 4

COMPLIANCE STATUS (RESULT CODE)	IN COMP.	NOT IN COMPLI-ANCE	ON SCHEDULE
All permit conditions	~~Q~~		
Permit emission limits	R	A	I
Emission standards	S	B	J
Performance reqts.	T	C	K
Monitoring & Reporting	U	D	L
Open burning limits	V	E	M
Procedural Reqts.	W	F	N
Fugitive emissions	X	G	O
Other	Y	H	P

SOURCES IN VIOLATION & LIMITS VIOLATED

TREATMENT/PROCESS EQUIPMENT — ADDITIONAL REMARKS — OPERATING CONDITIONS

Producing only CREOSOTE
100,000 gal Mo. Production
7 employees

R. H. Dixon 12/7/81
SIGNATURE OF INSPECTOR AND DATE

REGION COPY

Henry E. Rassi
SIGNATURE OF PERSON INTERVIEWED AND DATE

DEQ/RO-101 (4/80)

Koppers022020

DEPARTMENT OF ENVIRONMENTAL QUALITY
Request for Analysis

Laboratory No. 81 [illegible] F11[illegible]

Location/Site: Koppers
Date: 10/2/81
Date Received Lab: 12-7-81

Collected By: R.H. Wilson
Program: WQ 3150b
Date Reported: Mult Co.

Purpose: Field check, Split Samples
Report Data To: ~~[illegible]~~

Comments: Outfall 001
Oil + G if possible

Item No.	Description	Sample Containers *				Test Required
		Basic Nutrients	DO BOD	Metals Organic	~~[illegible]~~	
	Outfall 001			X268		Phenols

Dept. of Environmental Quality
RECEIVED
DEC 14 1981
NORTHWEST REGION

* Basic - Unpreserved sample; Nutrient - Preserve with H_2SO_4

Metals - HNO_3 added in Laboratory do not rinse; Organic - Laboratory prepared Mason Jar

DEPARTMENT OF ENVIRONMENTAL QUALITY
Laboratory Data Sheet

Laboratory No. 81-0519
Page: 1 of: 1
Analysis Completed: 10 Dec 81

Koppers

Item No.	Test Results (All units in mg/l or ~~mg/m²~~)											
	Phenols	* O+G										
X265	0.2	0.8										

Comments: *Do O+G if possible, Do phenols first

DEPARTMENT OF ENVIRONMENTAL QUALITY
SOURCE INSPECTION FORM

COUNTY: Mult

PROGRAM V ~~2~~

SOURCE NAME: Koppers

SOURCE ADDRESS: 7540 NW St. Helens Rd.

~~IRS~~

OFFICIAL CONTACTED: Paul Guth

TABLE A PARA	PREP. TIME	TRANS TIME	INSPECTION TIME	PAPER TIME
	0.5	0.5	1.0	0.5

PERMIT NUMBER CO.	PERMIT NUMBER SOURCE	POINT	ACTION NO.		ACTION TYPE	DATE SCHEDULED MO. DAY YR.	DATE ACHIEVED MO. DAY YR.	RESULT	INSPEC. NO.
	3077J	001	04	7	99	1 15 80	1 15 80	01	B08

8 1 [redacted] phenols (1240) 0.29 0.0002 ← LAB
2 TEMP 7°C
3 pH < 6.5

POINT	ACTION NO.		ACTION TYPE	DATE SCHEDULED MO. DAY YR.	DATE ACHIEVED MO. DAY YR.	RESULT	INSPEC. NO.
002	04	7	99	1 15 80	1 15 80	01	B08

SOURCE DESCRIPTION: Runoff H_2O

8 1 pH < 6.5
2 TEMP 7°C
3

POINT	ACTION NO.		ACTION TYPE	DATE SCHEDULED MO. DAY YR.	DATE ACHIEVED MO. DAY YR.	RESULT	INSPEC. NO.
		7					

SOURCE DESCRIPTION:

8 1
2
3

POINT	ACTION NO.		ACTION TYPE	DATE SCHEDULED MO. DAY YR.	DATE ACHIEVED MO. DAY YR.	RESULT	INSPEC. NO.
		7					

SOURCE DESCRIPTION:

8 1
2
3

COMPLIANCE STATUS:
☒ IN
☐ OUT

Some coal tar pitch buried on site / [redacted]
only H_2O d/c runoff water & boiler H_2O d/c
Sanitary to city of Ptld - Still utilize seperator - use as part of contingency
All tanks concrete bermed - TANKS IN USE bottom normal dirt - some ground H_2O d/c
TANKS - NOT IN USE - bottom concrete lined -

David Berger 1-15-80
SIGNATURE OF INSPECTOR AND DATE

Paul Guth 1-15-80
SIGNATURE OF PERSON INTERVIEWED AND DATE

DEQ/RO-101 (2/79)

REGION COPY

Koppers022023

I.W. NWR

I. 80-005

DHB

DEPARTMENT OF ENVIRONMENTAL QUALITY

SPECIAL SURVEY DATA SHEET

Location: Koppers   Date: 1-15-79   Date Received (Lab): 1/15/80

Collected by: Dave Berber   Weather: Clear   Date Reported: 2/1/80

Purpose: Inspection

FIELD INFORMATION

Lab. No.	Bottle No. DO		pH	Temp.	Cl_2	Flow	Description	Test Required
240							[illegible]	Phenols
47							[illegible]	O&G

LABORATORY RESULTS

Lab. No.	Lab. pH	DO	BOD Results	Susp. Solids ml	Susp. Solids SS	Phenol mg/l	O&G mg/l			
1240						.24	—			
0147						—	0.2			

Dept. of Environmental Quality
RECEIVED
FEB 7 1980
NORTHWEST REGION

DEQ/L-300-7/76

[illegible] 0.1 [illegible]

Koppers022024

TRB, LDP

DEPARTMENT OF ENVIRONMENTAL QUALITY
1234 S. W. Morrison
Portland, Oregon 97205

POLLUTION COMPLAINT

Pollution Type:

Date: 2-17-78

Time: 9:15

☐ Air ☑ Water ☐ Solid Waste/Hazardous Waste
☐ Noise ☐ Oil ☐ Subsurface Sewage

Date & Time Observed: 2-

Source: Koppers Chemical

Location: ~~outfall~~ St. John's – west side of river

Description: white foamy water into river pouring off of their property.

Reported by: Name: Dayton

Address: 7756 N. Crawford

City: Portland ZIP

County: Mult. Phone

In person ☐ Letter ☐ Phone ☑ Complaint taken by 286-3913

Referred to: (Agency or Person) SMW

Action Taken: met w/ Vance Klaus @ PNWNG storage site; water being pumped from their sump across Koppers (leased < PNWNG) property was picking up contaminated soil & carrying > Willamette. O&G levels were w/in NPDES limits according to chemist. ~~If you~~ ~~[illegible]~~ called complnt 2-21-78 PNWNG had rec'd permission to d/c < LDT.

Tom Amiss

DEQ/RO-100-10/75

Koppers022025

State of Oregon
DEPARTMENT OF ENVIRONMENTAL QUALITY

INTEROFFICE MEMO

(SMW) ✓ KLM

To: ~~LDB~~ CC: ~~SW~~

(9/16/76)
Date: September 24, 1976

From: ~~SW~~ SMW

Subject: SW - Koppers, Multnomah County

Telephone call with Paul Goth. Says it would cost between \$80 - \$100/load to transfer his solid waste to Arlington. What is the feasibility of taking it 5-10 truck loads a month. -- St. Johns? There are ≈ 100 loads at the site.

1. FIND OUT HOW PLEW'S WILL HANDLE MATERIAL
2. WRITE PLEW'S A NOTE cc: SW
3. NOTIFY GOTH WITH APPROPRIATE CONDITIONS
   A. 5-10 LOADS/WK AT ST. JOHNS OK
   B. MIX CLEAN MATERIAL WITH WORST MATERIAL TO MINIMIZE BAD LOADS

Koppers022026

T1U5

September 1, 1976

Mr. Paul W. Guth
Plant Superintendent
Koppers Company, Inc.
7540 N. W. St. Helens Road
Portland, Oregon 97229

Re: PERMIT ACTION
WQ - Koppers Company, Inc.
Multnomah County

Dear Mr. Guth:

This is in response to your letter of June 28, 1976, in which you stated that Koppers Company, Inc. is presently operating with the 1977 effluent limitations as set forth in Condition S5 of your National Pollutant Discharge Elimination System (NPDES) Waste Discharge Permit No. 2180-J.

On the basis of your plant's demonstrated ability to comply with the projected waste discharge limitations, the requirement for submittal of engineering plans as detailed in Condition S1 is hereby waived. This change is made on the condition that wastewater discharged from your plant continues to consistently meet criteria stated in Special Condition 5.

If you have any questions or if we can be of further assistance, please feel free to contact this office at 229-5348.

Sincerely,
Original Signed By
Loren Kramer

SEP 1 1976

LOREN KRAMER
Director

SMW/jms

cc: Environmental Protection Agency, Oregon Operations
Water Quality Division - DEQ

C̈ERTIFIED MAIL
RETURN RECEIPT REQUESTED

KOPPERS

June 28, 1976

Oregon Department of Environmental Quality
1234 S.W. Morrison Street
Portland, Oregon 97205

Gentlemen:

Special Condition No. 1 of Permit No. 2180-J issued to this facility specified that plans for compliance with the effluent limitations of that permit be submitted by July 1, 1976.

As shown by the Discharge Monitoring Reports, maintenance of existing effluent equipment at this facility has been sufficient to achieve compliance with the limitations of the permit.

Very truly yours,

P. W. Guth

P. W. Guth
Plant Superintendent
Koppers Company, Inc.
7540 N.W. St. Helens Road
Portland, Oregon 97229

DEPARTMENT OF ENVIRONMENTAL QUALITY

PORTLAND REGION

1234 S.W. MORRISON STREET • PORTLAND, ORE. 97205 • Telephone (503) 229-5263

June 14, 1976

Koppers Company, Inc.
7540 N. W. St. Helens Road
Portland, Oregon 97229

Re: WQ - Koppers Company, Inc.
Multnomah County

Gentlemen:

This will remind you that your National Pollutant Discharge Elimination System (NPDES) Waste Discharge Permit includes a compliance date of July 1, 1976.

Please review your permit, and in particular Condition S1.

If you have any questions or if we can be of any assistance, please feel free to contact this office at 229-5348.

Sincerely,

LOREN KRAMER
Director

Stephen M. Willingham
Assistant Regional Engineer
Portland Region

SMW/jms

EQ-26

INVESTIGATION AND COMPLIANCE
SPILL REPORT

Date Reported May 20, 1976 Time 10:20 AM

Name of Contact Petty Officer Mills Agency U.S. Coast Guard

This office received a phone call from the above person relative to an observation of a water pollution problem. The following information was provided:

1. Date observed ____________ Time ____________

Observer Kirk Roberts, Operations, Mgr. Phone # 224-0261

Address Shaffer Transportation

2. Location of Spill Koppers Chemical - Barge ST-21

3. Source of Spill Apparent leak from Barge ST-21 which was tied up at Koppers Chemical

4. Description of Spill:

a. Type of Material Diesel Quantity About 2 gallons

b. Width 50 x 100 feet d. Danger ____________

c. Length ____________ e. Other ____________

5. Action taken by responding agencies ____________

6. Corrective action taken: Natural dissipation

7. Notified Public Affairs Office Yes ☐ No. ☒

8. Call taken by Gloria Davis

cc: ~~Regional Office~~ PR
Water Quality
Public Affairs

R. P. Underwood
Laboratory, DEQ
EPA Oregon Operations

January 26, 1976

Koppers Company, Inc.
7540 N. W. St. Helens Road
Portland, Oregon 97229

Attention: Mr. Paul W. Goth,
Plant Superintendent

Re: WQ - Koppers Company, Inc.
Multnomah County
ENF-WQ-PR-76-15
NOTICE OF VIOLATION

Gentlemen:

During a recent review of your National Pollutant Discharge Elimination System (NPDES) Waste Discharge Permit monitoring reports, it was noted that Koppers Company, Inc. has not been submitting monitoring data for phenols in Discharge 001.

Please include this information with you future monthly monitoring reports.

If you have any questions or if we can be of any further assistance, please feel free to contact this office at 229-6955.

Sincerely,

LOREN KRAMER
Director

Larry D. Patterson
Regional Engineer
Portland Region

LDP/jms

cc: Regional Operations - DEQ
Water Quality Division - DEQ

Pittsburgh, Pa. 15219, Telephone 412-391-3300

WQ

KOPPERS

October 20, 1975

Department of Environmental Quality
1234 S.W. Morrison Street
Portland, Oregon 97205

Attn: Mr. Larry Patterson

Dear Sir:

Enclosed please find the spill prevention and contingency plan for the Portland, Oregon facility of Koppers Co., Inc. in accordance with special condition No. 15 of Permit No. 2180-J.

Very truly yours,

Paul W. Guth

Paul W. Guth
Plant Superintendent

ROBERT W. STRAUB
GOVERNOR

KESSLER R. CANNON
Director

DEPARTMENT OF ENVIRONMENTAL QUALITY

1234 S.W. MORRISON STREET • PORTLAND, OREGON • 97205 • (503) 238-847

June 9, 1975

Koppers
Organic Materials Division
Koppers Company, Inc
7540 N. W. St. Helens Road
Portland, Oregon 97229

Attention: Mr. Paul W. Guth, Plant Superintendent

Re: Oil Contaminated Water

Gentlemen:

This will acknowledge receipt of your two letters dated May 27 and PW May 28, 1975, in regard to oil contaminated waters being discharged from your property.

The program set forth in the May 28, 1975 letter seems to be timely and will serve as an intermediate control until you are able to meet the provisions of your NPDES permit referred to in the May 27, 1975 letter.

As agreed to, in our conversation on May 30, 1975, the completion date for the intermediate controls will be July 1, 1975.

The Department appreciates the Company's action in this incident. Your concern for the environment in Oregon is also appreciated.

Cordially,

KESSLER R. CANNON
Director

Douglas D. Fraley

Douglas D. Fraley
Division Engineer

DDF/bw

cc: U. S. Coast Guard, Portland, Oregon
cc: Water Quality Control
cc: Portland Region

KOPPERS
Chemicals
and Coatings

MAY 28, 1975

DEPT. OF ENVIRONMENTAL QUALITY
1234 S.W. MORRISON STREET
PORTLAND, OREGON 97205
ATTN: DOUGLAS D. FRALEY

GENTLEMEN;

THIS IS THE PROGRAM FOR OUR TIMELY ELIMINATION OF MATERIAL WHICH COULD CAUSE THE WATERS TO BE CONTAMINATED.

WE WILL PUT IN A THREE STAGE FILTER SYSTEM AT THE OUTFALL OF THE WATER LEAVING OUR PLANT.

AT TRACK #3 WE WILL PICK UP THE SOILED GROUND AND REPLACE WITH FRESH MATERIAL. BETWEEN THE TRACK WE WILL LET THE BALLAST SHOW. THE WALLED-IN CEMENT AREA BY TRACK #3 WILL ALSO HAVE THE SOILED GROUND REMOVED AND THEN BE REPLACED WITH FRESH MATERIAL.

THE LOADING SPOUTS WILL HAVE CONTAINERS TO CATCH ANY DRIPPINGS. THERE WILL BE PORTABLE CATCH BASINS BENEATH THE TANK CARS TO CATCH ANY DRIPPINGS ALSO.

THE UNLOADING LINE WILL BE REVAMPED TO MINIMIZE ANY CHANCE OF SPILLAGE. THE FLEX HOSES WILL CONTAIN CAPS FOR THE HOSES WHEN THEY ARE NOT IN USE.

TRACK #5 WILL HAVE THE SOILED MATERIAL REMOVED BETWEEN AND ON EITHER SIDE OF THE TRACK. SOME PORTIONS WILL BE FILLED IN BETWEEN THE TRACKS BECAUSE OF VEHICLE TRAFFIC OVER THE TRACKS.

THE AREA AROUND #42 TANK WILL THEN BE CLEANED OF SOILED GROUND AND THIS REPLACED WITH FRESH MATERIAL.

THE TAR PUMPS AREA WILL BE CLEANED AND HAVE DRIP PANS FOR ANY LEAKAGE.

RESPECTFULLY,

Paul W. Guth

PAUL W. GUTH
PLANT MANAGER

(rtified Mail
Return Receipt Requested

KOPPERS

May 27, 1975

Mr. Douglas D. Fraley
Division Engineer
Department of Environmental Quality
1234 S.W. Morrison Street
Portland, Oregon 97205

Gentlemen:

This letter is in reply to yours of April 29, 1975 regarding discharge of contaminated water. The Water Pollution Control Division of the Department is preparing to issue an NPDES permit to this facility. This permit will contain provisions requiring the treatment of contaminated effluent before discharge. It is expected that this control system will prevent discharge of untreated contaminated effluent.

Very truly yours,

P. W. Guth
Plant Superintendent

DEPARTMENT OF ENVIRONMENTAL QUALITY

1234 S.W. MORRISON STREET • PORTLAND, OREGON • 97205 • (503) 229-XXXX
238-8471

ROBERT W. STRAUB
GOVERNOR

KESSLER R. CANNON
Director

April 29, 1975

Koppers
Organic Materials Division
Koppers Company, Inc.
7540 N. W. St. Helens Road
Portland, Oregon 97229

Attention: Mr. Paul W. Guth

Re: Meeting of April 24, 1975

Gentlemen:

This letter is in reference to our meeting of April 24, 1975, concerning the oil contaminated waters which are being discharged from your property.

To reemphasize our conversation, you are responsible for any problems which occur as a result of the oil on your property, as well as any cleanup costs.

Specifically, oily waste has been deposited on your property such that it is entering or likely to enter public waters, which is in violation of Oregon Revised Statutes 468.785, a copy of which you received at our meeting.

Therefore, it is requested that you submit a program for a timely elimination of this problem to the Department within thirty (30) days of receipt of this letter.

Your immediate attention to this matter is appreciated.

Respectfully,

KESSLER R. CANNON
Director

Douglas D. Fraley
Division Engineer

DDF/bw

cc: Water Quality
Portland Region
U. S. Coast Guard

SPILL PREVENTION PLAN CHECKLIST

3. Onshore Facilities (Excluding Production)

A. Drainage:	Yes	No
(1) Drains from diked storage areas have valves.	X	
(2) Drain valves are manual, open-and-closed design.	X	
(3) Rainwater from diked areas is inspected before draining.	X	
(4) Plant drainage systems are equipped with either:		
a. Ponds, lagoons, or catchment basins to retain oil, or	X	
b. A diversion system at the final discharge point which could contain an uncontrolled spill and return the oil to the plant.		
(5) Flow of drainage water between treatment units is by either:		
a. Natural hydraulic flow, or		
b. Two "lift" pumps (one a spare and one permanently installed).		

Discussion:

B. Bulk Storage Tanks	Yes	No
(1) Tank material and construction comply with API specifications	X	
(2) Secondary containment volume (3 million) is greater than the largest single tank capacity plus an allowance for rainwater.	X	
(3) Drainage of rainwater from diked areas into open waters, by-passing inplant treatment, is accomplished according to the following: N/A		
a. Normally the bypass valve is sealed close.		
b. The rainwater is inspected to ensure compliance with water quality standards.		
c. The bypass valve is opened and resealed under responsible supervision.		
d. Records are kept of bypassing and drainage events.		
(4) Buried metallic storage tanks: N/A		
a. New tanks are coated and wrapped to reduce corrosion.		
b. Cathodic protection is provided for tanks as determined by electrolytic testing.		
c. Tanks are pressure tested on a scheduled, periodic basis.		
(5) Partially buried metallic tanks are avoided (for storing oil) unless adequate shell coating is provided for the buried portion. N/A		

	Yes	No
(6) Aboveground tanks are tested by one of the following methods:		
a. Hydrostatic testing		
b. Visual inspection	X	
c. Shell thickness testing (comparison records of shell thickness reduction are maintained)		
(7) Internal heating coil leakage is controlled by one or more of the following:		
a. Monitoring the steam return or exhaust lines for oil.	X	
b. Passing the steam return or exhaust lines through a settling tank, skimmer or other separation system.		
c. Installing external heating systems.		
(8) All bulk storage tanks are externally inspected on a monthly basis (including seams, rivets, bolts, gaskets, nozzle connections, valves, connected pipelines, and tank foundation and/or supports) for leaks or failures.	X	
(9) Tanks are fail-safe engineered by the following:		
a. High liquid level alarms with an audible signal at a constantly manned station.		
b. High liquid level pump cutoff devices.		
c. Direct communication between the tank gauger and pumping station.		
d. One fast means of determining the liquid level in tanks (such as digital computers, telepulse, or direct visual gauges).	X	
e. Liquid level sensing devices are inspected and tested on a scheduled, periodic basis.		

Discussion: ______________________________

4. Intra-Facility Transfer Operations, Pumping, and Inplant Process (Onshore; Excluding Production)

A. Buried Pipelines

	Yes	No
(1) Pipelines are wrapped and coated to reduce corrosion		
(2) Cathodic protection is provided for pipelines as determined by electrolytic testing.		
(3) When a pipeline section is exposed, it is inspected and corrective action taken as necessary.	X	

Discussion: ______________________________

	Yes	No
B. Pipeline terminal connections are capped or blank-flanged and marked if the pipeline is not in service or on standby service for long periods.	X	

Discussion: ______

C. Pipe supports are designed to minimize abrasion and corrosion and allow for expansion and contractions.	X	

Discussion: ______

D. All aboveground valves and pipelines are inspected on a scheduled, periodic basis (including flange joints, valve glands and bodies, catch pans, pipeline supports, locking of valves, and metal surfaces).	X	

Discussion: ______

E. Vehicles entering the facility are inspected and/or warned to avoid damaging aboveground piping.	X	

Discussion: ______

5. Intra-facility Tank Car & Tank Truck Loading/Unloading (Onshore)

A. Loading/unloading procedures meet the minimum requirements and regulations of the Department of Transportation.		
B. The unloading area has quick drainage system.		
C. The containment system will hold maximum capacity of any single tank truck loaded/unloaded in the plant.		
D. An interlocked warning light or physical barrier system or warning signs are provided in loading/unloading areas to prevent vehicular departure before disconnect of transfer lines.		
E. Drains and outlets on tank trucks and tank cars are checked for leakage before loading or unloading.	X	

Discussion: ______

6. Inspections and Records	Yes	No
A. The required inspections follow written procedures		
B. The written procedures and a record of inspections, signed by the appropriate supervisor, are included in the SPCC Plan.		

Discussion:

7. Security (Excluding Production)	Yes	No
A. Plants handling or storing oil are fenced.	X	
B. Entrance gates are locked and/or guarded when the plant is unattended or not in production.	X	
C. Any valves which permit direct outward flow of a tank's contents are locked closed when in non-operating or non-standby status.		
D. Starter controls on all oil pumps in non-operating or non-standby status are locked or electrically isolated in the "off" position.		
E. The loading/unloading connections of oil pipelines are capped or blank-flanged when not in service or on standby service for extended periods.		

F. Description of the lighting around the facility: General yard lighting.

Discussion:

8. Personnel, Training, and Spill Prevention Procedures	Yes	No
A. Personnel are properly instructed in the following:		
(1) Operation and maintenance of equipment to prevent oil discharges, and	X	
(2) Applicable pollution control laws, rules, and regulations.	X	
B. Spill prevention briefings for the operating personnel are conducted on a scheduled, periodic basis.		

SPILL PREVENTION PLAN CHECKLIST

Discussion: ______

SPILL PREVENTION CONTROL & COUNTERMEASURE PLAN

Section 311(j)(1)(C) of the Federal Water Pollution Control Act Amendments of 1972, authorized the President to issue regulations establishing procedures, methods, equipment and other requirements to prevent discharges of oil and hazardous substances from vessels and from onshore facilities and offshore facilities, and to contain such discharges. The President delegated the responsibility for such regulations to the Administrator of the Environmental Protection Agency. Accordingly, the Administrator developed and promulgated Oil Pollution Prevention Regulations in 40 CFR Part 112. These regulations require owners and operators on shore and offshore non-transportation-related facilities to develop and implement Spill Prevention Control and Countermeasure (SPCC) Plans to prevent the discharge of oil into the navigable waters of the United States or adjoining shoreline. Owners or operators are not required to develop an SPCC Plan if their facilities have not discharged and because of their location could not be reasonably expected to discharge oil into the navigable waters of the United States.

GENERAL INFORMATION

1. Name and location of facility:

   Name Koppers Company, Inc.
   Location:
   Direction and distance to nearest town (attach map) ______
   County Multnomah State Oregon

2. Name, address and phone number of owner or operator:

   Name Koppers Company, Inc.
   Address: 7540 N.W.
   Street St. Helens Rd. State Oregon
   City Portland Zip 97229 County Multnomah
   Telephone No. 503 286-3681

3. Name or title and telephone number of person in charge of facility:

   Name or title Paul Guth Telephone: 503 286-3681

4. Name and telephone number of person responsible for oil spill prevention at facility:

   Name Paul Guth Telephone: 503 286-3681

Certification

I hereby certify and attest that I am familiar with the facility and the information contained in this plan and that to the best of my knowledge and belief such information is true, complete and accurate. Further, this plan has been prepared in accordance with good engineering practices.

DONALD LEE O'DELL
Printed name of Registered Engineer
Date: JULY 3, 1974

Donald Lee O'Dell
Signature of Registered Engineer
Registration No.: Pe No. 4700

SPILL RECORD

	Yes	No
1. This facility, over the past year, has had a reportable spill.	X	

2. Descriptions of any reportable spills are given below, including corrective action taken and plans for preventing recurrence:

See attachments.

Phone Numbers

Environmental Protection Agency - 221-3250

Department of Environmental Quality - 229-5696

Fire Department - 232-2111

Coast Guard - 221-2994

Police Department - 226-7551

PREDICTION OF POTENTIAL SPILL

1. Name of plant(s): Northwest

2. Nearest navigable water:

   A. Name: Williamette River

   B. Distance and direction from plant(s): East of Plant approx. 1800 ft.

3. Possible spill sources:

Source	Type of Failure	Maximum Volume(bbls.)	Maximum Flow Rate(bbls./hr.)	Direction of Flow

See attached sheet.

SPILL PREVENTION PLAN CHECKLIST

1. Secondary containment and/or diversionary structures are used for possible spill sources:

Source	Type of Containment or Diversionary Structure

See attached sheet.

Select from:
Onshore: Dikes, berms, retaining walls; curbing; culverting, gutters, drains; weirs, booms, other barriers; spill diversion and retention ponds.
Offshore: Floating booms or fences; floating oil/water separators with storage.

2. If the containment or diversionary structures above are impracticable, state reasons for impracticability N/A

and attach a strong oil spill contingency plan and written commitment of manpower, equipment and materials required to expeditiously control and remove any harmful quantity of oil discharged. Check if attached:

Contingency Plan ________ Written Commitment ________

Discussion: ________

KOPPERS COMPANY, INC.

PORTLAND, OREGON

Tank No.	Gallons (M)	Contents
1	660	Tar
2	1065	Tar
3	99	Creosote
4	99	Creosote
11	254	Tar
17	20	Creosote
18	20	Creosote
19	20	Creosote
20	317	Creosote
23	20	Creosote
33	45	Creosote
34	45	Creosote
65	880	Tar
66	240	Creosote
67	102	Creosote
68	248	Creosote
90	209	Creosote
101	6 47 750	Creosote
	5,093,000	

Prediction of Potential Spills

2B. The water flow leaving the plant and entering the Willamette River at approx. 3/4 of a mile from the plant. The water flows South of the plant and then East into the river.

The river at closest point to the plant is 1800 ft., but the water from the plant does not enter here.

7540 N.W. St. Helens Road, Portland, Ore. 97229
Telephone 503-286-3681

WQ-

KOPPERS
Chemicals
and Coatings

OCTOBER 6, 1975

DEPARTMENT OF ENVIRONMENTAL QUALITY
1234 S.W. MORRISON STREET
PORTLAND, OREGON 97205

ATTN: MR. LARRY PATTERSON

DEAR SIR:

WE ARE IN THE PROCESS OF REVISING OUR SPILL PREVENTION, AND CONTINGENCY PLAN TO CONFORM TO OUR WASTE WATER PERMIT. THE PLAN WILL BE COMPLETED BY OCTOBER 31, 1975.

SINCERELY

Paul W. Guth

PAUL W. GUTH
PLANT SUPERINTENDENT

PWG:ip

Pittsburgh, Pa. 15219, Telephone 412-391-3300

KD1

WQ-

Certified Mail
Return Receipt Requested

KOPPERS

August 20, 1975

Oregon Department of Environmental Quality
1234 S.W. Morrison St.
Portland, OR 97205

Attn: Mr. Larry Patterson

Dear Sir:

With respect to paragraph 14 on page 4 of 7 of Permit No. 2180-J issued to Koppers Company, Inc., this is to certify that in the event of a reduction, loss or failure of a power source, Koppers Company shall halt, reduce or otherwise control production and/or all discharges in order to maintain compliance with the terms and conditions of Permit No. 2180-J.

Very truly yours,

P.W. Guth

P. W. Guth
Plant Superintendent

Pittsburgh, Pa. 15219, Telephone 412-391-3300

WQ-

State of Oregon
DEPARTMENT OF ENVIRONMENTAL QUALITY
RECEIVED
JUL 31 1975
WATER QUALITY CONTROL

Certified Mail
Return Receipt Requested

KOPPERS

July 29, 1975

Department of Environmental Quality
1234 S.W. Morrison Street
Portland, Oregon 97205

Re: Koppers Company, Inc.
7540 N.W. St. Helens Road
Portland, Oregon 97229
Permit No. 2180-J

Gentlemen:

Sampling and analytical procedures will be according to the Standard Methods of the Environmental Protection Agency and the Department of Environmental Quality. For 001, the boiler blowdown sample will be taken at the south end of the boiler house, the tank farm runoff sample at the southwest corner of the plant, and storm water runoff sample at the center catch basin in the parking area. For 002, the cooling water sample will be taken at the base of the dike wall at the southeast corner of the tank farm, and the air compressor cooling water sample will be taken at the east side of the boiler house.

Very truly yours,

Paul W. Guth

Paul W. Guth
Plant Superintendent

State of Oregon
DEPARTMENT OF ENVIRONMENTAL QUALITY

INTEROFFICE MEMO

To: Files

Date: July 14, 1975

From: Douglas D. Fraley

Subject: Koppers Chemical

On July 10, 1975, Larry Patterson and I made an inspection of Koppers Company on St. Helens Road. The purpose of the inspection was to check on completion of intermediate controls for elimination of oil contaminated waters. This inspection revealed the following:

1. The three-stage filter has been installed at the outfall of the drain leaving their property. The filter material being used is Ecelsior.

2. The material at track #3 has been removed and fresh material put back in. This will be covered with gravel.

3. The loading spouts are being capped to prevent spillage when not in use.

4. The unloading line has been revamped to minimize chance of spillage. All flex hoses have been capped when not in use.

5. The material at track #5 has been removed and fresh soil put back in, then covered with gravel.

Conclusion:

They have done a good job of cleaning up around their plant. I believe that this will help eliminate the oil discharge from the plant. The filter should be observed during the wet weather when the water flow is high.

DDF:gcd
cc: Portland Regional Office, DEQ
U. S. Coast Guard
Water Quality Control, DEQ

DEQ 4

DEPARTMENT OF
ENVIRONMENTAL QUALITY

1234 S.W. MORRISON STREET • PORTLAND, OREGON • 97205 • (503) ~~229~~ 238-8471

ROBERT W. STRAUB
~~TOM McCALL~~
GOVERNOR

KESSLER R. CANNON
Director

June 9, 1975

Koppers
Organic Materials Division
Koppers Company, Inc
7540 N. W. St. Helens Road
Portland, Oregon 97229

Attention: Mr. Paul W. Guth, Plant Superintendent

Re: Oil Contaminated Water

Gentlemen:

This will acknowledge receipt of your two letters dated May 27 and May 28, 1975, in regard to oil contaminated waters being discharged from your property.

The program set forth in the May 28, 1975 letter seems to be timely and will serve as an intermediate control until you are able to meet the provisions of your NPDES permit referred to in the May 27, 1975 letter.

As agreed to, in our conversation on May 30, 1975, the completion date for the intermediate controls will be July 1, 1975.

The Department appreciates the Company's action in this incident. Your concern for the environment in Oregon is also appreciated.

Cordially,

KESSLER R. CANNON
Director

Douglas D. Fraley
Division Engineer

DDF/bw

cc: U. S. Coast Guard, Portland, Oregon
cc: Water Quality Control
cc: Portland Region

Contains Recycled Materials

Telephone 503-286-3681

KOPPERS
Chemicals
and Coatings

MAY 28, 1975

DEPT. OF ENVIRONMENTAL QUALITY
1234 S.W. MORRISON STREET
PORTLAND, OREGON 97205
ATTN: DOUGLAS D. FRALEY

TIME SCHEDULE

GENTLEMEN:

THIS IS THE PROGRAM FOR OUR TIMELY ELIMINATION OF MATERIAL WHICH COULD CAUSE THE WATERS TO BE CONTAMINATED.

WE WILL PUT IN A THREE STAGE FILTER SYSTEM AT THE OUTFALL OF THE WATER LEAVING OUR PLANT.

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THE AREA AROUND #42 TANK WILL THEN BE CLEANED OF SOILED GROUND AND THIS REPLACED WITH FRESH MATERIAL.

THE TAR PUMPS AREA WILL BE CLEANED AND HAVE DRIP PANS FOR ANY LEAKAGE.

RESPECTFULLY,

Paul W. Guth

PAUL W. GUTH

PLANT MANAGER

7540 N.W. St. Helens Road, Portland, Ore. 97229
Telephone 503-286-3681

KOPPERS
Chemicals
and Coatings

MAY 28, 1975

DEPT. OF ENVIRONMENTAL QUALITY
1234 S.W. MORRISON STREET
PORTLAND, OREGON 97205
ATTN: DOUGLAS D. FRALEY

GENTLEMEN:

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THE AREA AROUND #42 TANK WILL THEN BE CLEANED OF SOILED GROUND AND THIS REPLACED WITH FRESH MATERIAL.

THE TAR PUMPS AREA WILL BE CLEANED AND HAVE DRIP PANS FOR ANY LEAKAGE.

RESPECTFULLY,

Paul W. Guth

PAUL W. GUTH

PLANT MANAGER

DEPARTMENT OF
ENVIRONMENTAL QUALITY

NWRO

R
TKB
SOP

1234 S.W. MORRISON STREET • PORTLAND, ORE. 97205 • Telephone (503) 229-5696

May 30, 1975

WQ -

Koppers
Organic Materials Division
7540 N. W. St. Helens Road
Portland, Oregon 97229

Attention: Mr. Paul W. Guth, Plant Superintendent

Re: W. Q. - Koppers
Multnomah County

Gentlemen:

This letter will refer to your letter, dated May 20, 1975, concerning your comments relative to the proposed NPDES Waste Discharge Permit for your Portland plant.

The phenol effluent discharge limitations of 0.5 mg/l (monthly average) and 0.7 mg/l (daily maximum) as required in the permit beginning July 1, 1977, are the minimum levels which we believe we can allow from your plant. The Water Quality Standards for the Willamette River for phenols is 0.001 mg/l. Even with a discharge level of 0.5 mg/l from your plant, your waste will have to be diluted 500 times to meet the standards.

Furthermore, we believe your Company can practicably install a waste water control system which can reliably meet these effluent limitations. It is true that an oil-water separator alone will probably not be able to achieve these limits, but a separator followed by a small aerated lagoon should provide sufficient treatment.

In regards to your comment relative to the oil and grease effluent discharge limitations, it should be pointed out that oil terminals in the Portland area can consistently meet oil grease limits of 10 mg/l (monthly average) and 15 mg/l (daily maximum). Most of these terminals use only a gravity separator for treatment. Consequently, we can find no reason for increasing the daily maximum oil and grease limitation to 20 mg/l.

COPY

Q-2

Finally, as proposed, the permit does not prohibit you from discharging your waste water to the City of Portland sewerage system. Should your Company be granted permission from the City to discharge wastes to the City's sewerage system, you could connect your wastes to that system without violating the permit or receiving Departmental approval. Consequantly, there is no need to add a condition to the permit to allow you to connect to the City of Portland sewerage system.

Should you have questions relative to this matter, please feel free to contact Mr. Dick Nichols in this office at 229-5309.

Very truly yours,

KESSLER R. CANNON
Director

Charles K. Ashbaker, Administrator
Water Pollution Control Division
Water Quality Program

RJN:rb

cc: NWRO (DEQ)

State of Oregon
DEPARTMENT OF ENVIRONMENTAL QUALITY

RECEIVED
MAY 27 1975

WATER QUALITY CONTROL

KOPPERS

May 20, 1975

Mr. Charles K. Ashbaker, Administrator
Water Pollution Control Division
Dept. of Environmental Quality
1234 S.W. Morrison Street
Portland, OR 97205

Re: W.Q. - Koppers
Multnomah County

Dear Sir:

We wish to comment on the proposed NPDES permit for Koppers' Portland, Oregon plant. The proposed permit as presently written in paragraph 5 on page 2 requires that plant effluent be treated to reduce phenol to less than 0.5 mg/l as a monthly average and 0.7 mg/l as a daily maximum. These limits are quite stringent, and would be difficult to achieve consistently. In view of the low discharge volume from this small and intermittently operated plant, these limits should be 1.0 mg/l as a monthly average and 2.0 mg/l as a daily maximum.

The proposed daily maximum limitation for oil and grease as shown in paragraph 5 on page 2 is 15 mg/l. This limitation should be revised to 20 mg/l in recognition of the fact that any well-operated effluent treatment system is still subject to fluctuations.

The proposed permit is written such that plant effluent must be treated and discharged to the Willamette River. Koppers is planning to investigate as part of the compliance program, various methods to reduce effluent volume throughout the plant. If these methods are successful, it may be possible to reduce volume to the extent that this effluent would be acceptable to the City of Portland for discharge to the municipal sewer system. Therefore, it is requested that the permit be revised to allow for this possibility in the event that it can be achieved.

The permit expiration date shown in the upper right-hand corner of each page should be revised.

Thank you for this opportunity to comment.

Very truly yours,

P.W. Guth

P. W. Guth
Plant Superintendent

TMB
LDF

DEPARTMENT OF ENVIRONMENTAL QUALITY

1234 S.W. MORRISON STREET • PORTLAND, OREGON • 97205 • (503) ~~229-XX~~
238-8471

ROBERT W. STRAUB
~~TOM McCALL~~
GOVERNOR

KESSLER R. CANNON
Director

April 29, 1975

Koppers
Organic Materials Division
Koppers Company, Inc.
7540 N. W. St. Helens Road
Portland, Oregon 97229

wq

Attention: Mr. Paul W. Guth

Re: Meeting of April 24, 1975

Gentlemen:

This letter is in reference to our meeting of April 24, 1975, concerning the oil contaminated waters which are being discharged from your property.

Te reemphasize our conversation, you are responsible for any problems which occur as a result of the oil on your property, as well as any cleanup costs.

Specifically, oily waste has been deposited on your property such that it is entering or likely to enter public waters, which is in violation of Oregon Revised Statutes 468.785, a copy of which you received at our meeting.

Therefore, it is requested that you submit a program for a timely elimination of this problem to the Department within thirty (30) days of receipt of this letter.

Your immediate attention to this matter is appreciated.

Respectfully,

KESSLER R. CANNON
Director

Douglas D. Fraley

Douglas D. Fraley
Division Engineer

DDF/bw

cc: Water Quality
Portland Region
U. S. Coast Guard

Contains
Recycled
Materials

DEQ 1

Koppers022056

DEPARTMENT OF ENVIRONMENTAL QUALITY

1234 S.W. MORRISON STREET • PORTLAND, ORE. 97205 • Telephone (503) 229-5696

April 4, 1975

WQ – Koppers Company Mult. Co
1201 Koppers Building
Pittsburg, Pennsylvania 15219

Re: File No. 47430

Gentlemen:

This is the draft of the permit that was sent out on notice on April 4, 1975. The public notice period will be up May 4, 1975, after which the permit will be issued.

If you have any further comments, please let us know within this 30-day period.

Very truly yours,

KESSLER R. CANNON
Director

Charles K. Ashbaker
Administrator
Water Pollution Control Division

CKA:rb

Enclosure

NWRO, DEQ

NORTHWEST REGION OFFICE
RECEIVED
APR - 7 1975
DEPARTMENT OF
ENVIRONMENTAL QUALITY

COPY

DEQ-2

THE CITY OF
PORTLAND
OREGON

DEPARTMENT OF
PUBLIC WORKS

CONNIE McCREADY
COMMISSIONER

OFFICE OF
PUBLIC WORKS
ADMINISTRATOR

400 S.W. SIXTH AVE.
PORTLAND, OR. 97204

To CK4, RVL
Cy to REG.

OFFICE OF DEPUTY DIRECTORS
RECEIVED
MAR 28 1975
DEPT. OF ENVIROMENTAL QUALITY

March 27, 1975

Department of Environmental Quality
1234 SW Morrison Street
Portland, Oregon 97205

Attn: E. J. Weathersbee, Director, Technical Services

WQ- Re: Koppers Co. - 7540 NW St. Helens Road, Portland

Gentlemen:

We are in receipt of your letter dated March 19, 1975 inviting comments regarding NPDES permit application OR-000077-9 for the above referenced discharger.

Your draft requires the permittee to submit plans to the department by May 1, 1975, for connecting all wastewaters to the City of Portland's sewerage system by November 1, 1975. We will be pleased to accept the permittee's effluent subject to meeting Portland's sewer regulations. Accordingly, we request the opportunity to review concurrently with your department, all plans prepared by the permittee regarding proposed drainage and pretreatment facilities.

Please contact Harry Edmonds of our Industrial Wastewater staff (telephone 248-4678) if you have any comments or questions regarding this matter.

Very truly yours,

L. D. BROWNSON, P. E.
Principal Engineer

HGE:al

cc: Dick Nichols - DEQ

State of Oregon
DEPARTMENT OF ENVIRONMENTAL QUALITY
RECEIVED
APR 2 1975
WATER QUALITY CONTROL

7.kg
cop

WQ -

Certified Mail
Return Receipt Requested

KOPPERS

March 27, 1975

Department of Environmental Quality
Northwest Region
1010 N.E. Couch Street
Portland, Oregon 97232

Attn: Mr. Richard J. Nichols
Engineer-Technical Services

Re: Appl. No. OR-000077-9
File No. 47430

Gentlemen:

We are in receipt of the draft NPDES permit for the Koppers Company plant located at 7540 N.W. St. Helens Road, and wish to make several comments on it.

Since the proposed permit specifies that the discharge limitations will be achieved by connecting all wastewaters to the City of Portland sewage system, the City must agree to accept this effluent before the permit can be issued in the final form. The compliance program to be prepared by Koppers must have a firm basis on which to proceed.

The compliance schedule should be revised so that final plans for connection to the sewage system are due 60 days after the City accepts this connection principle. Engineering cannot begin on the connection facilities until the City provides a firm design basis by agreeing to accept the effluent. Discharge to the municipal system would be 9 months after the connection plan is approved by the City. This period of time is required due to the delivery time for pumps and other equipment of approximately 34 weeks.

Thank you for this opportunity to comment.

Very truly yours,

P. W. Guth

P. W. Guth
Superintendent

Koppers022059

THE CITY OF
PORTLAND
OREGON

DEPARTMENT OF
PUBLIC WORKS
CONNIE McCREADY
COMMISSIONER

OFFICE OF
PUBLIC WORKS
ADMINISTRATOR

400 S.W. SIXTH AVE.
PORTLAND, OR. 97204

March 27, 1975

Department of Environmental Quality
1234 SW Morrison Street
Portland, Oregon 97205

Attn: E. J. Weathersbee, Director, Technical Services

WQ-
Re: Koppers Co. - 7540 NW St. Helens Road, Portland

Gentlemen:

We are in receipt of your letter dated March 19, 1975 inviting comments regarding NPDES permit application OR-000077-9 for the above referenced discharger.

Your draft requires the permittee to submit plans to the department by May 1, 1975, for connecting all wastewaters to the City of Portland's sewerage system by November 1, 1975. We will be pleased to accept the permittee's effluent subject to meeting Portland's sewer regulations. Accordingly, we request the opportunity to review concurrently with your department, all plans prepared by the permittee regarding proposed drainage and pretreatment facilities.

Please contact Harry Edmonds of our Industrial Wastewater staff (telephone 248-4678) if you have any comments or questions regarding this matter.

Very truly yours,

LDB

L. D. BROWNSON, P. E.
Principal Engineer

HGE:al

cc: Dick Nichols - DEQ

BACKGROUND

Koppers Northwest Plant at Portland, Oregon was designed to produce 25,000 tons per year of electrode pitch for the aluminum industry. It has not been able to realize that capacity because of a general shortage of coal tar and a specific lack of availability of coal tar on the west coast. In December, 1973 the production facilities at the plant were shut down because of lack of raw materials.

Because of the abundant supply of petroleum residues on the west coast, Koppers, for many years, has been conducting research on means of producing electrode pitches from petroleum sources that were of as good quality as coal tar pitch. Investigation led to a process for manufacturing pitch blended from petroleum residue and a small amount of coal tar that Koppers had in storage at the Northwest Plant. One local customer indicated an interest in making a plant scale test using about 1,000 tons of this material. Koppers applied for and received permission to operate the plant on a temporary basis and produce this material. This batch will be completed about February 1, 1975 and the customer has indicated an interest in buying as much more of this material as Koppers can produce. This would be about 4,000 tons and would take four more months to produce.

Meanwhile, Koppers has developed a process for producing a suitable pitch from petroleum base alone. Unfortunately, this requires some equipment Koppers does not have available at Portland, Oregon to make the product. Koppers could pretreat the petroleum base in a small pilot plant at its California Plant and ship it to Portland to accumulate for the final processing and prepare plant scale samples for customer evaluation as it did with the coal tar/petroleum blend.

If the customers accept the new product, Koppers would initiate a capital expenditure to provide the facilities at the Northwest Plant to perform the complete operation of producing pitch from petroleum bases.

R.L.S.
1/24/75

[illegible] PROGRAM [illegible] NORTHWEST [illegible]
[illegible]LAND, OREGON

1. DECEMBER [illegible] - [illegible]UARY 1, 197[illegible] - PREPARATION [illegible] BATCH OF [illegible] PETRO[illegible] PITCH [illegible] FOR CUSTOMER

2. FEBRUARY 1, 1975 - [illegible] 1, 1975 - CUSTOMER EVALUATION [illegible] TAR-PET[illegible] PITCH.

3. APRIL 1, [illegible] - JUNE 1, 1975 - PRODUCTION OF SAMPLES OF STRAIGHT PETROLEUM PITCH FOR CUSTOMER EVALUATION.

4. JUNE 1, 1975 - NOVEMBER 1, 1975 - PRODUCTION OF ADDITIONAL 4000 TONS COAL TAR-PETROLEUM PITCH FOR CUST[illegible]. [illegible] SOME ADDITIONAL STRAIGHT RUN PETROLEUM [illegible] SAMPLES WILL BE MADE FOR CUSTOMER TESTING.

5. NOVEMBER 1975 - APPROVAL OF CAPITAL EXPENDITURE [illegible] PETROLEUM PITCH FACILITIES. SUBMIT FLOW SHEETS - TIME SCHEDULE

6. DECEMBER 1, 1975 - OCTOBER 1, 1976 - PURCHASING, [illegible] AND ERECTION OF PETROLEUM PITCH PRODUCTION FACILITIES. SOME PRODUCTION OF ADDITIONAL CUSTOMER SAMPLES IN PRESENT EQUIPMENT.

7. OCTOBER 1, 1976 - START UP

R.L.S.
1/23/75

PROPOSED PROGRAM FOR NORTHWEST PLANT
PORTLAND, OREGON

1. December, 1974 to February 1, 1975 - Preparation of initial batch of coal tar - petroleum pitch blend for customer testing.

2. February 1, 1975 to July 1, 1975 - Production of additional 4000 tons coal tar - petroleum pitch for customer.

3. July 1, 1975 - October 1, 1975 - Production of plant scale samples of straight petroleum pitch for customer evaluation.

4. October, 1975 - Approval of capital expenditure to build petroleum pitch production facilities. Plan Revised

5. November 1, 1975 - September 1, 1976 - Purchasing, delivery and erection of petroleum pitch production facilities. Some production of additional customer samples on old equipment.

6. September 1, 1976 - Start up of new facilities.

R.L.S.
1/24/75

NORTHWEST TANK FARM

RAINWATER COLLECTION AND TREATMENT

JANUARY 23, 1975

RAINWATER COLLECTION AND TREATMENT PROCESS DESCRIPTION

The tank farm will be paved to facilitate the collection and treatment of rainwater, and to prevent flooding by ground seepage when the water table rises.

The floor of the tank farm will slope from the center of the farm to a drainage ditch on each side. Rainwater will run off the floor of the tank farm, into the ditches, and then into a drainage sump.

Two float actuated, alternating sump pumps will transfer water from the drainage sump to the holding tank. In case the water level in the drainage sump triggers the high level alarm, both pumps would be activated.

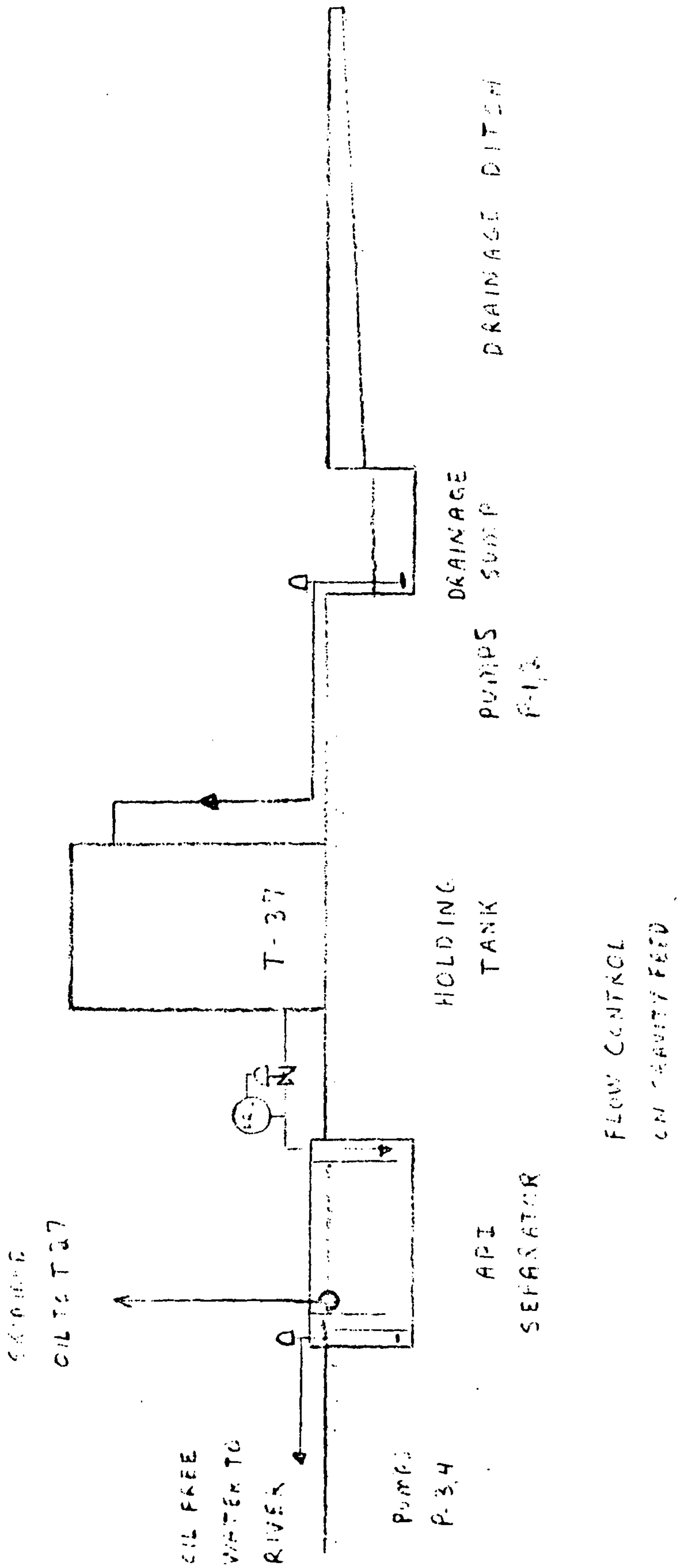
Water in the holding tank will drain into the API separator through a flow-recorder-controller. Any oil present will be skimmed off the surface of the separator and collected in tank T-23 for further processing. Clean water will be pumped out of the separator and into a storm water ditch leading to the river by two float activated, alternating sump pumps.

1. TANK FARM STORM RUNOFF

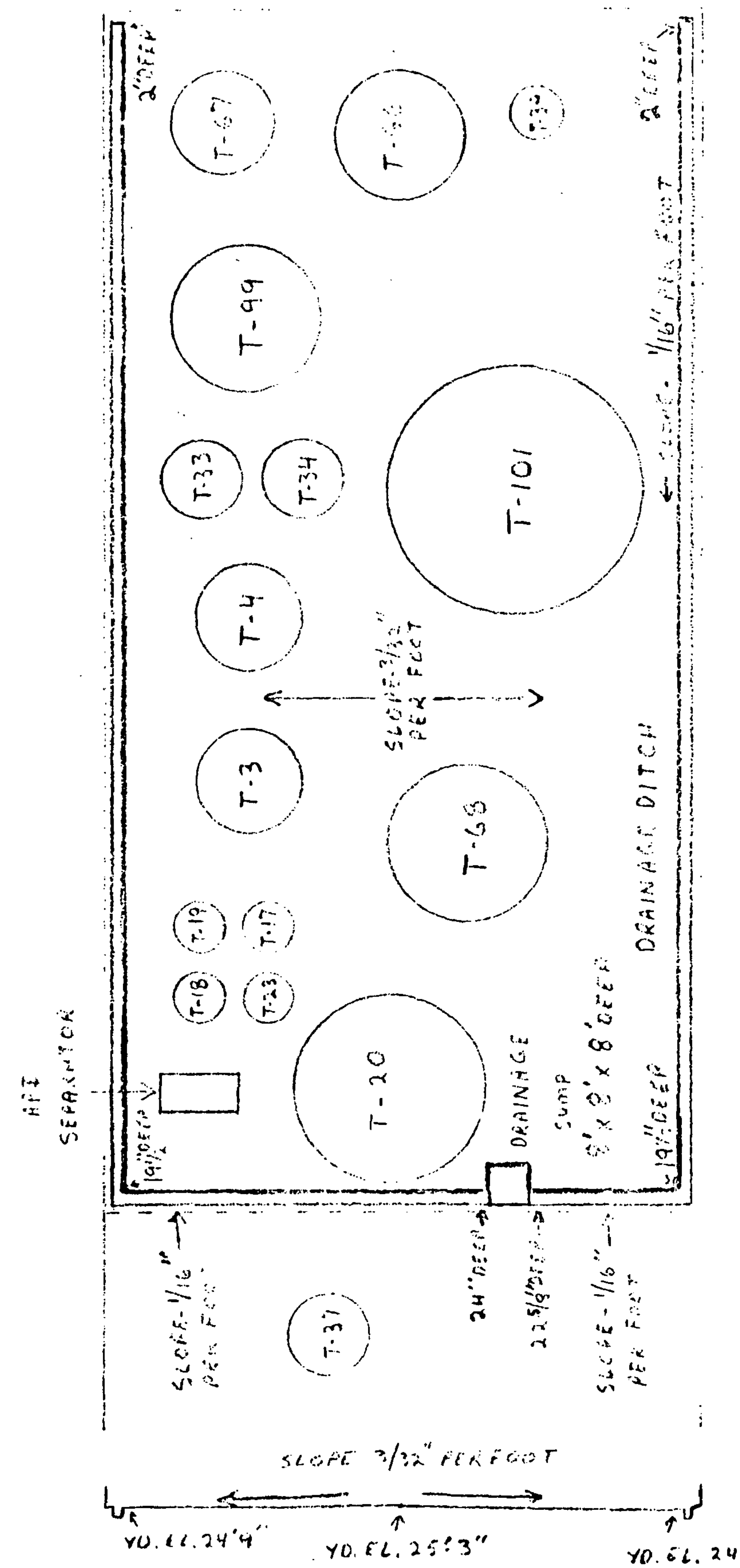
L. Bily
1-24-75

BY ______ DATE ______ SUBJECT ______ SHEET NO. ______

CHKD. BY ______ DATE ______ JOB NO. ______



CHKD. BY ______ DATE ______ JOB NO. ______



NORTHWEST TANK FARM PAVING

Air Mail
Return Receipt Requested

Pittsburgh, Pa. 15219, Telephone 412-391-3300

KOPPERS

December 11, 1974

Mr. Richard J. Nichols
Engineer-Technical Services
Department of Environmental Quality
1010 N.E. Couch Street
Portland, Oregon 97232

Subject: Application No. 071-OYA-2-000189

Dear Mr. Nichols:

This is to inform you that Koppers intends to resume operations temporarily at 2570 N.W. Street and St. Helens Road in order to produce an experimental batch of 1,000 tons of electrode binder pitch to be used in a trial run at a local customer's plant. The plant will operate part time for four to six weeks to produce this material and then cease operating while the material is evaluated by our customer. We do not expect to produce any changes in our present effluent discharge because of this operation. We are proceeding to draw up plans to control our tank farm infiltration as outlined in Mr. Guth's letter of October 30, 1974.

Very truly yours,

R L Shannon

R. L. Shannon
Engineering Department

RLS:jfc

Pittsburgh, Pa. 15219, Telephone 412-391-3300

File
W. G.
Mult. Co.

Certified Mail
Return Receipt Requested

KOPPERS

October 30, 1974

Mr. Richard J. Nichols
Engineer - Technical Services
Department of Environmental Quality
1010 N.E. Couch Street
Portland, Oregon 97232

Re: Appl. No. 071-OYA-2-000189

Dear Sir:

On March 7, 1974, a letter was sent to Mr. Charles K. Ashbaker of your office advising that production at this location had been temporarily suspended, and that effluent sampling at that time would not be representative. On September 24, 1974, you visited the plant to review plant operations and the effluent permit application. As of this date, production has not resumed, and plans are still indefinite as to when it will resume.

The major portion of the effluent from this location is ground water which collects in the tank farm area. The floor of the tank farm, which is below grade, will be paved to reduce the volume of ground water which infiltrates this area. This water will be pretreated in the API separator and then discharged, together with boiler house effluent, to the sanitary sewer which has recently been extended through the plant property.

These plans will be reviewed with the sewer authority to obtain their approval.

Very truly yours,

Paul W. Guth

Paul W. Guth
Plant Superintendent

KOPPERS

January 3, 1974

Department of Environmental Quality
1234 S. W. Morrison Street
Portland, Oregon 97205

ATTN: Mr. Charles K. Ashbaker

Dear Sir:

In response to your letter of December 17, 1973, we have reviewed our pending Refuse Act permit application 071-OYA-2-000189, and are unsure if it is still accurate. Therefore, we are undertaking a program of sampling and analysis of this discharge. We expect to report revisions, if any, in that application to you by April 1, 1974.

Very truly yours,

Paul W. Guth

Paul W. Guth
Superintendent
Koppers Company, Inc.
7540 N. W. St. Helens Road
Portland, Oregon 97229

PWG/mak

FORM APPROVED
OMB NO. 49-R 0408

DEPARTMENT OF THE ARMY, CORPS OF ENGINEERS

JUN 29 1971

APPLICATION FOR PERMIT TO DISCHARGE OR WORK IN NAVIGABLE WATERS AND THEIR TRIBUTARIES

OK-000077-9
File # 47430

000189

CTION I. GENERAL INFORMATION

1. State	Application Number (to be assigned by Corps of Engineers)			
O R	07L	09A	2	------
	Div.	Dist.	Type	Sequence No.

2. Name of applicant and title of signing official
Koppers Company, Inc.
R. E. Spatz - Vice President & Asst. General Manager - Organic Matls. Div.

3. Mailing address of applicant
Koppers Company, Inc.
1201 Koppers Building
Pittsburgh, Pennsylvania 15219

4. Name, address, telephone number and title of applicant's authorized agent for permit application coordination and correspondence.
Paul W. Guth, Plant Superintendent
7540 N.W. St. Helena Road
Portland, Oregon 97229
503-286-3681

NOTE TO APPLICANT: Refer to the pamphlet entitled "Permits for Work and Structures in and for Discharges or Deposits into Navigable Waters" before attempting to complete this form.

Required Information

a. All information contained in this application will, upon request, be made available to the public for inspection and copying. A separate sheet entitled "Confidential Answers" must be used to set out information which is considered by the applicant to constitute trade secrets or commercial or financial information of a confidential nature. The information must clearly indicate the item number to which it applies. Confidential treatment can be considered only for that information for which a specific written request of confidentiality has been made on the attached sheet. However, in no event will identification of the contents and frequency of a discharge be recognized as confidential or privileged information.

b. The applicant shall furnish such supplementary information as is required by the District Engineer in order to evaluate fully an application.

c. If additional space is needed for a complete response to any item on this form, attach a sheet entitled "Additional Information." Indicate on that sheet the item numbers to which answers apply.

d. Drawings required by items 20 and 21 should be attached to this application. Other papers which must be attached to this application include, if applicable, copies of a water quality certification or a written communication which describes water quality impact (see Item 22 and Item 10 of Section II below), the additional information sheet(s) in "c" above, and the confidential information sheet described in "a" above.

Fees

If any discharge or deposit is involved, an application fee of $100 must be submitted with this application. An additional $50 is required for each additional point of discharge or deposit.

Signature

a. If a discharge is involved, an application submitted by a corporation must be signed by the principal executive officer of that corporation or by an official of the rank of corporate vice president or above who reports directly to such principal executive officer and who has been designated by the principal executive officer to make such applications on behalf of the corporation. In the case of a partnership or a sole proprietorship, the application must be signed by a general partner or the proprietor. Other signature requirements are discussed in the pamphlet.

b. If no discharge is involved, an application may be signed by the applicant or his authorized agent.

Application is hereby made for a permit or permits to authorize the activities described herein. I certify that I am familiar with the information contained in this application, and that to the best of my knowledge and belief such information is true, complete, and accurate.

R. E. Spatz
Signature of Applicant

18 U.S.C. Section 1001 provides that:

Whoever, in any matter within the jurisdiction of any department or agency of the United States knowingly and willfully falsifies, conceals or covers up by any trick, scheme, or device a material fact, or makes any false, fictitious or fraudulent statements or representations, or makes or uses any false writing or document knowing same to contain any false, fictitious or fraudulent statement or entry, shall be fined not more than $10,000 or imprisoned not more than five years, or both.

FOR CORPS OF ENGINEERS USE ONLY

Acronym name of applicant

Are discharge structures Major? ☐ Minor? ☐ N/A? ☐

	day	mo	yr
Date received, form not complete			
Date received, form complete but without certificate			
Date received, form complete			
Date of Cert./Ltr.			
Date sent to EPA, form not complete			
Date sent to EPA, NOAA, D/I, AEC, FPC in complete form			

ENG FORM 4345
MAY 71

Koppers022071

5 Date 6 29 71
mo day yr

(Office use only) 0(. -0YA-2-000189

6. Check type of application: a. Original [X] b. Revision [ ]

7. Number of original application
JUN 21 1972

8. Name of facility where discharge or construction will occur.
Koppers Company, Inc.
Northwest Plant

9. Full mailing address of facility named in item 8 above.
Koppers Company, Inc.
7540 N. W. St. Helena Road
Portland, Oregon 97229

10. Names and mailing addresses of all adjoining property owners whose property also adjoins the waterway.

Northwest Natural Gas Co.	Rivergate Rock Products
7900 N. W. St. Helena Road	7881 N. W. St. Helena Road
Portland, Oregon 97229	Portland, Oregon 97229

11. Check to indicate the nature of the proposed activity:
a. Dredging [ ] b. Construction [ ] c. Construction with Discharge [ ] b. Discharge only [X]

12. If activity is temporary in nature, estimate its duration in months.

If application is for a discharge:

13. List intake sources

Source	Estimated Volume in Million Gallons Per day or Fraction Thereof
Municipal or private water supply system	.054
Surface water body	
Ground water	
Other	

14. Describe water usage within the plant

Type	Estimated Volume in Million Gallons Per day or Fraction Thereof
Cooling water	.014
Boiler Feed water	.040
Process water	
Sanitary system*	.001
Other	

15. List volume of discharges or losses other than into navigable waters.

Type	Estimated Volume in Million Gallons Per day or Fraction Thereof
Municipal waste treatment system	
Surface containment	.002
Underground disposal	
Waste Acceptance firms	
Evaporation	.018
Consumption	

* Indicate number employees served per day 12

If structures exist, or dredging, filling or oth[illegible] construction will occur, the precise location of the activity must be desc[illegible].

(Office use only) 000189

JUN 29 1971

a. Name the corporate boundaries within which the structures exist or the activity will occur.

16. State: Oregon 17. County: Multnomah 18. City or Town: Portland

b. Name of waterway at the location of the activity

19. Willamette River

20. Maps and sketches which show the location and character of each structure or activity, including any and all outfall devices, dispersive devices, and non-structural points of discharge, must be attached to this application.

21. For construction or work in navigable waters for which a separate permit is sought under 33 U.S.C. 403, the character of each structure must be fully shown on detailed plans to be submitted with this application. Note on the drawings those structures for which separate discharge information (Section II of this form) has been submitted.

22. List all approvals or denials granted by Federal, interstate, State or local agencies for any structures, construction, discharges or deposits described in this application.

Type of document	Id. No.	Date	Issuing Agency
Letter	1 W 3-0	1-11-66	Oregon State Sanitary Authority

23. Check if facility existed or was lawfully under construction prior to April 3, 1970. [X]

24. If dredging or filling will occur:

State the type of materials involved, their volume in cubic yards, and the proposed method of measurement.

Not Applicable

25. Describe the proposed method of instrumentation which will be used to measure the volume of any solids which may be deposited and to determine its effect upon the waterway.

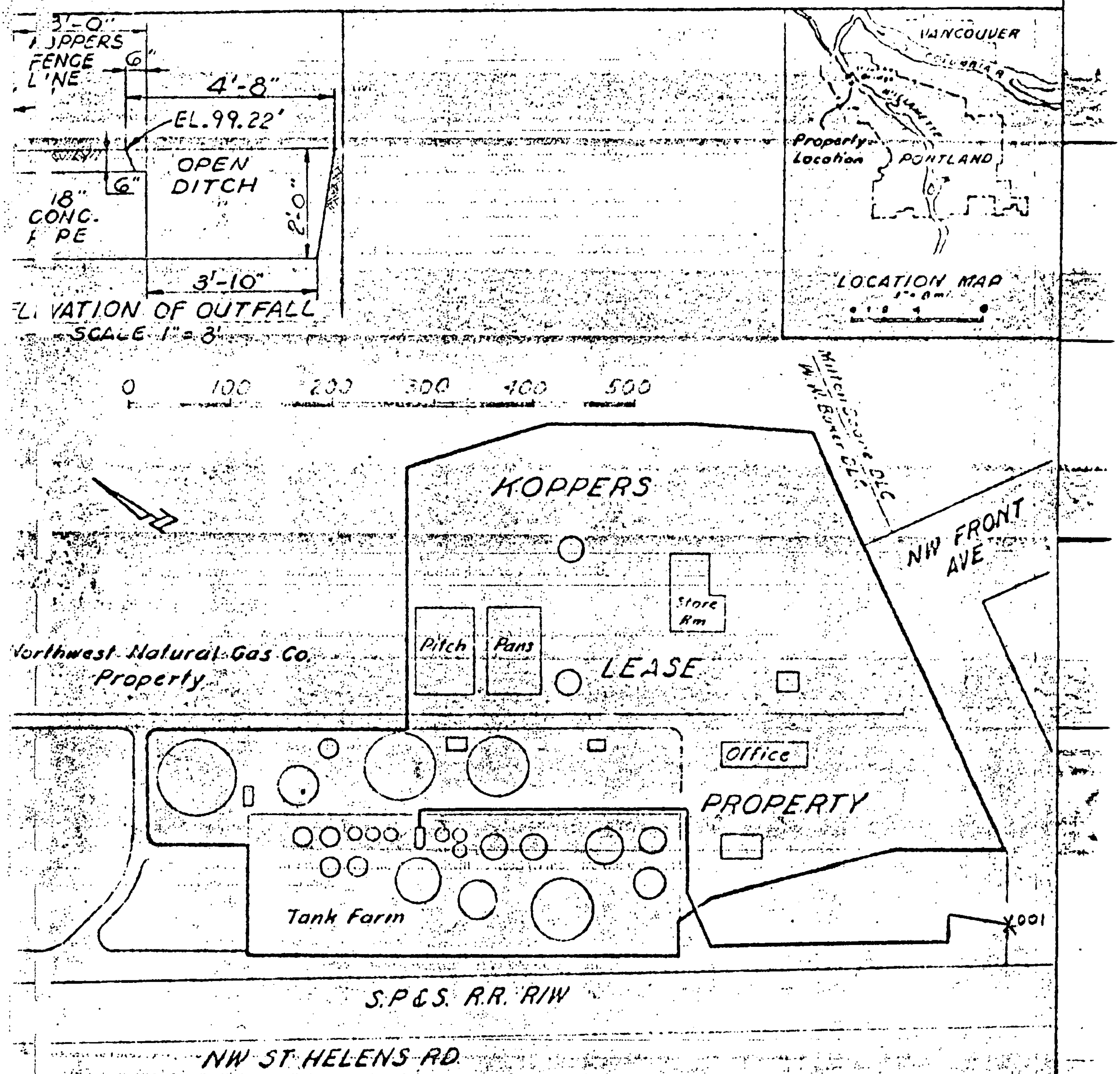
Not Applicable

26. State rates and periods of deposition described in Item 25.

Not Applicable

000139

NOV 19 1971

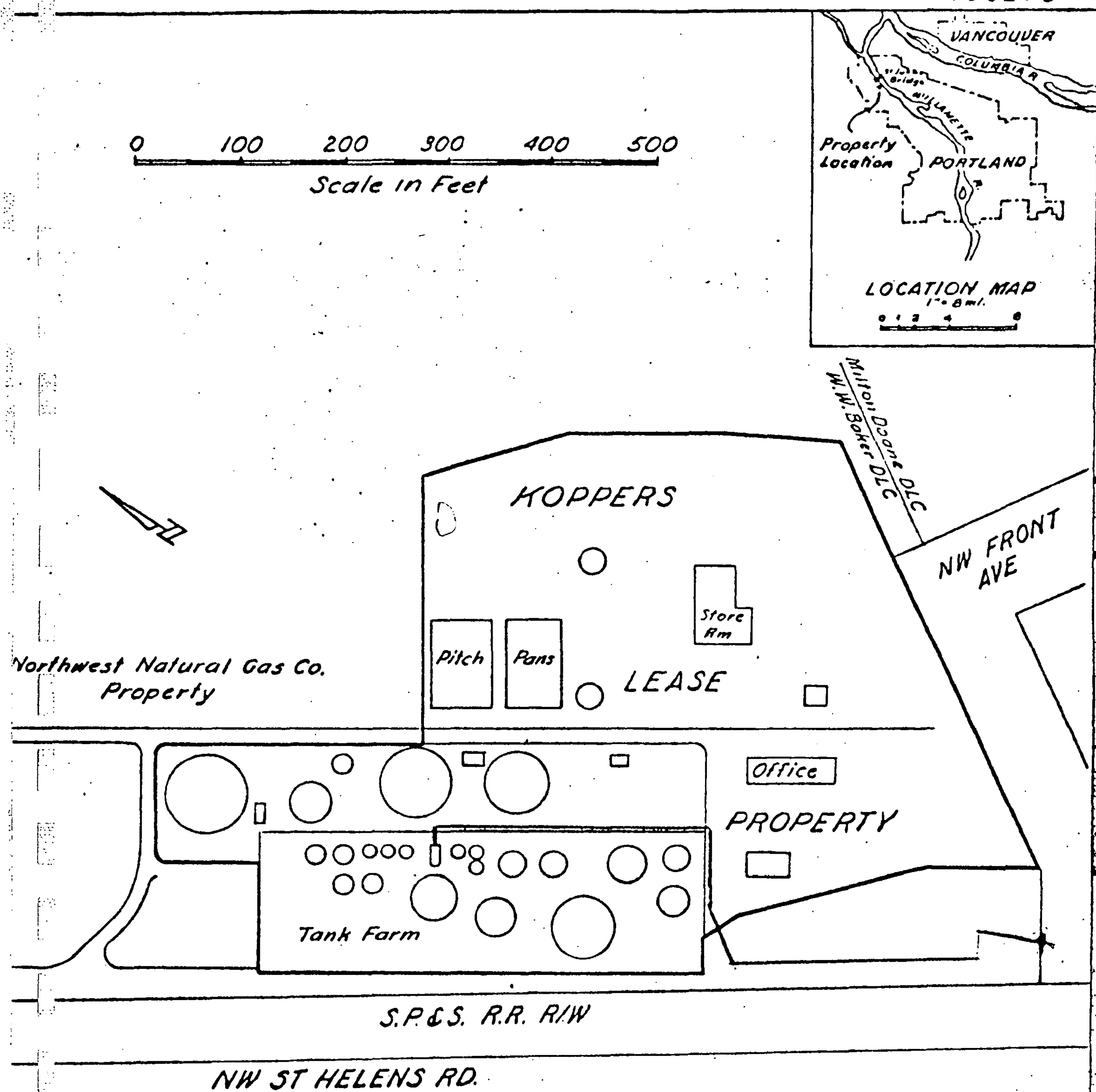


Location of Koppers Lease Property on Northwest Natural Gas Co. property at 7900 NW St Helens Rd., City of Portland, County of Multnomah, State of Oregon.

June 3, 1971
REVISED Nov. 5, 1971

JUN 29 1971

000189



Location of Koppers Lease Property on Northwest Natural Gas Co. property at 7900 NW St Helens Rd., City of Portland, County of Multnomah, State of Oregon.

June 3, 1971

SECTION II. PLANT PROCESS AND DISCHARGE DESCRIPTION

1. Discharge described below is: a. Present [X] b. Proposed new or changed [ ]	2. Implementation schedule [ ]	(Office use only) NOV 19 1971 000189

Name of corporate boundaries within which the point of discharge is located.

State	County	City or Town	6. Discharge Serial No.
3. Oregon	4. Muttnomach	5. Portland	001

State the precise location of the point of discharge.

7. Latitude N 45 Degrees; 3 5 Min; ___ Sec.

8. Longitude W 122 Degrees; 4 6 Min; ___ Sec.

9. Name of waterway at the point of discharge.

Unnamed Drainage Ditch.

10. Has application for water quality certification or description of impact been made? If so, give date:

Date	Check if certificate is attached to form	Name Issuing Agency
6 (mo) 29 (day) 71 (yr)	[ ]	Oregon Dept. of Environmental Quality

11. Narrative description of activity (include terms of general 4-digit Standard Industrial Classification, and specific manufacturing process).

Primarily engaged in manufacturing industrial organic chemicals by the distillation of coke oven tar.

12. Standard industrial classification number.	13. Principal product.	14. Amount of principal product produced per day.
SIC 2818	See #15	See #16

15. Principal raw material.	16. Amount of principal raw material consumed per day.	17. Number of batch discharges per day.
Coke Oven Tar	280,000 lbs.	Not Applicable.

18. Average gallons per batch discharge.	19. Date discharge began.	20. Date discharge will begin.
Not Applicable.	6 (mo) 1 (day) 66 (yr)	___ (mo) ___ (day) ___ (yr)

21. Describe waste abatement practices.

Water discharged at this outfall is contained in a separate drainage system where pumps with special seals and local separators are employed.

ESEPAR, EPUMPS, LOCALS.

PHYSICA[illegible] [illegible]CRIPTION OF INTAKE WATER AND D[illegible]ARGE

Intake | Discharge | (Office use only) JUN 29 1971 | 000189

Discharge Serial No. 001

Parameter and (Code)	UNTREATED INTAKE WATER (1)	TREATED INTAKE WATER (2)	AVERAGE (DAILY) (3)	MINIMUM (OPERATING YEAR) (4)	MAXIMUM (OPERATING YEAR) (5)	SAMPLE FREQUENCY (6)	CONTINUOUS MONITORING (7)
F[illegible]w (Gallons per day) 00056		54,000	34,000	Data Not Avail.	Data Not Avail.	OTHR	ABS
p[illegible] 00400		6.9	8.8	Data Not Avail.	Data Not Avail.	OTHR	ABS
T[illegible]nperature ([illegible]nter) (°F) 74028		45	85	Data Not Avail.	Data Not Avail.	OTHR	ABS
T[illegible]nperature ([illegible]mmer) (°F) 7[illegible]027		52	110	Data Not Avail.	Data Not Avail.	OTHR	ABS

2[illegible]

DISCHARGE CONTENTS

PARAMETER	PRESENT	ABSENT	PARAMETER	PRESENT	ABSENT	PARAMETER	PRESENT	ABSENT
Color 00080	X		Aluminum 01105		X	Nickel 01067		X
T[illegible]bidity [illegible]070	X		Antimony 01097		X	Selenium 01147		X
Radioactivity 74050		X	Arsenic 01002		X	Silver 01077		X
H[illegible]rdness [illegible]900	X		Beryllium 01012		X	Potassium 00937	X	
S[illegible]ids 00500	X		Barium 01007		X	Sodium 00929	X	
Ammonia [illegible]610	X		Boron 01022		X	Titanium 01152		X
[illegible]ganic Nitrogen 00605	X		Cadmium 01027		X	Tin 01102		X
Nitrate [illegible]620	X		Calcium 00916	X		Zinc 01092		X
[illegible]rite [illegible]615		X	Cobalt 01037		X	Algicides 74051		X
Phosphorus 00665	X		Chromium 01034		X	Oil and Grease 00550	X	
S[illegible]fate [illegible]945	X		Copper 01042		X	Phenols 32730	X	
Sulfide 00745	X		Iron 01045	X		Surfactants 38260		X
S[illegible]lfite [illegible]740		X	Lead 01051		X	Chlorinated Hydrocarbons 74052		X
[illegible]omide 71870		X	Magnesium 00927		X	Pesticides 74053		X
Chloride [illegible]940	X		Manganese 01055		X	Fecal Streptococci Bacteria 74054		X
[illegible]anide 00720	X		Mercury 71900		X	Coliform Bacteria 74056		X
Fluoride [illegible]951		X	Molybdenum 01062		X			

[illegible]IG FORM [illegible]MAY 71 4345-1

Koppers022077

23. Have all known hazardous or potentially hazardous substances in your plant been inventoried?

☐ Yes ☒ No

JUN 29 1971 000189

24. If yes, have steps been taken to insure that there exists no possibility of any such known hazardous or potentially hazardous substance entering this discharge?

☐ Yes ☐ No

25. Remarks. Principal Raw Material is used as process unit in Part A, Column 4. Item 24a. is checked NO even though we feel that we have such substances under control, because the question is too vague and all encompassing to answer yes comfortably. In Part A all maximum values are arbitrarily taken as 140% of the average in lieu of sufficient data. Part A information is based upon a 24 hour composite sample.

The information above completes the basic reporting requirements which are required of all applicants. Those applicants whose discharge results from an activity included within any of the Standard Industrial Classification Code (SIC Code) categories listed below must complete Part A of this form as well.

CRITICAL INDUSTRIAL GROUPS

SIC	098	FISH HATCHERIES, FARMS, AND PRESERVES
SIC	10-14	DIVISION B – MINING
SIC	201	MEAT PRODUCTS
SIC	202	DAIRY PRODUCTS
SIC	203	CANNED PRESERVED FRUITS, VEGETABLES (EXCEPT SEAFOODS, SIC 2031 AND 2036)
SIC	2031, 2036	CANNED AND CURED FISH AND SEAFOODS; FRESH OR FROZEN PACKAGED FISH AND SEAFOODS
SIC	204	GRAIN MILL PRODUCTS
SIC	206	SUGAR
SIC	207	CONFECTIONARY AND RELATED PRODUCTS
SIC	208	BEVERAGES
SIC	209	MISCELLANEOUS FOOD PREPARATIONS AND KINDRED PRODUCTS
SIC	22	TEXTILE MILL PRODUCTS
SIC	23	APPAREL AND OTHER FINISHED PRODUCTS MADE FROM FABRICS AND SIMILAR MATERIALS
SIC	242	SAWMILLS AND PLANING MILLS
SIC	2432	VENEER AND PLYWOOD
SIC	2491	WOOD PRESERVING
SIC	26	PAPER AND ALLIED PRODUCTS
SIC	281	INDUSTRIAL INORGANIC AND ORGANIC CHEMICALS (EXCEPT SIC 2818)
SIC	2818	INDUSTRIAL ORGANIC CHEMICALS
SIC	282	PLASTICS MATERIALS AND SYNTHETIC RESINS, SYNTHETIC RUBBER, SYNTHETIC AND OTHER MAN-MADE FIBERS, EXCEPT GLASS
SIC	283	DRUGS
SIC	284	SOAP, DETERGENTS, AND CLEANING PREPARATIONS, PERFUMES, COSMETICS, AND OTHER TOILET PREPARATIONS
SIC	285	PAINTS, VARNISHES, LACQUERS, ENAMELS, AND ALLIED PRODUCTS
SIC	2871	FERTILIZERS
SIC	2879	AGRICULTURAL PESTICIDES, AND OTHER AGRICULTURAL CHEMICALS, NOT ELSEWHERE CLASSIFIED
SIC	2891	ADHESIVES AND GELATIN
SIC	2892	EXPLOSIVES
SIC	29	PETROLEUM REFINING AND RELATED INDUSTRIES
SIC	3011, 3069	TIRES AND INNER TUBES; FABRICATED RUBBER PRODUCTS, NOT ELSEWHERE CLASSIFIED
SIC	3079	MISCELLANEOUS PLASTICS PRODUCTS
SIC	311	LEATHER TANNING AND FINISHING
SIC	32	STONE, CLAY, GLASS, AND CONCRETE PRODUCTS
SIC	331	BLAST FURNACES, STEEL WORKS, AND ROLLING AND FINISHING MILLS
SIC	332	IRON AND STEEL FOUNDRIES
SIC	333, 334	PRIMARY SMELTING AND REFINING OF NONFERROUS METALS; SECONDARY SMELTING AND REFINING OF NONFERROUS METALS
SIC	336	NONFERROUS FOUNDRIES
SIC	347	COATING, ENGRAVING, AND ALLIED SERVICES
SIC	35	MACHINERY, EXCEPT ELECTRICAL
SIC	36	ELECTRICAL MACHINERY, EQUIPMENT, AND SUPPLIES
SIC	37	TRANSPORTATION EQUIPMENT (EXCEPT SHIP BUILDING AND REPAIRING, SIC 3731)
SIC	3731	SHIP BUILDING AND REPAIRING
SIC	491	ELECTRIC COMPANIES AND SYSTEMS
SIC	493	COMBINATION COMPANIES AND SYSTEMS

(Note: Submission of Part A is required of all applicants whose processes are listed on page 3 above.)

(Office use only) 1-0YA-2-000189
MAY 24 1972

Discharge Serial No. 001

INFORMATION REQUIRED OF SPECIFIED INDUSTRIES

PARAMETER AND CODE	Intake: UNTREATED INTAKE WATER (DAILY AVG. CONCENTRATION) (1)	Intake: TREATED INTAKE WATER (DAILY AVG. CONCENTRATION) (2)	Discharge: MAXIMUM CONCENTRATION (3)	Discharge: MAXIMUM POUNDS PER DAY PER PROCESS UNIT (4)	Discharge: MAXIMUM POUNDS PER DAY (5)	Discharge: DAILY AVG. CONCENTRATION (6)	Discharge: AVERAGE POUNDS PER DAY (7)	Discharge: SAMPLE TYPE (8)	Discharge: SAMPLE FREQUENCY (9)	Discharge: METHOD OF ANALYSIS (10)	Discharge: CONTINUOUS MONITORING (11)
ALKALINITY (as $CaCO_3$) 00410		14	101	10X 10^{-5}	28	72	20	COMP	OTHR	AWWA	ABS
B.O.D. 5-DAY 00310		1	112	11 X 10^{-5}	32	80	23	COMP	OTHR	AWWA	ABS
CHEMICAL OXYGEN DEMAND (C.O.D.) 00340		3	334	35 X 10^{-5}	98	246	70	COMP	OTHR	AWWA	ABS
TOTAL SOLIDS 00500		28	246	25 X 10^{-5}	70	176	50	COMP	OTHR	AWWA	ABS
TOTAL DISSOLVED SOLIDS 70300		26.8	162	16 X 10^{-5}	46	116	33	COMP	OTHR	AWWA	ABS
TOTAL SUSPENDED SOLIDS 00530		1.2	84	86 X 10^{-6}	24	60	17	COMP	OTHR	AWWA	ABS
TOTAL VOLATILE SOLIDS 00505		11.5	106	11 X 10^{-5}	31	76	22	COMP	OTHR	AWWA	ABS
AMMONIA (as N) 00610		0.2	7.98	81 X 10^{-7}	2.27	5.7	1.62	COMP	OTHR	AWWA	ABS
KJELDAHL NITROGEN 00625		4.4	36.5	3.69X 10^{-5}	10.3	26.1	7.39	GRAB	OTHR	AWWA	ABS
NITRATE (as N) 00620		0.08	.71	75 X 10^{-8}	.21	.51	0.15	COMP	OTHR	AWWA	ABS
PHOSPHORUS TOTAL (as P) 00665		0.01	.42	46 X 10^{-8}	.13	.30	.09	COMP	OTHR	AWWA	ABS

TABLE A
Guide for Completion of Part A

PARAMETER & UNITS	METHOD	REFERENCES: STANDARD METHODS 13TH ED. 1971	REFERENCES: A.S.T.M. STANDARDS Pt. 23 1970	REFERENCES: W.Q.O. METHODS 1971	SIGNIFICANCE IN REPORTING DATA
ALKALINITY as $CaCO_3$ Mg/liter	ELECTROMETRIC TITRATION TECHNICON METHYL ORANGE METHOD	p. 370	p. 154	p. 6	X.
B.O.D. 5-DAY Mg/liter	MODIFIED WINKLER METHOD OR PROBE METHOD	p. 489	p. 712	p. 15	X.
CHEMICAL OXYGEN DEMAND (C.O.D.) Mg/liter	DICHROMATE REFLUX METHOD	p. 495	–	p. 17	X.
TOTAL SOLIDS Mg/liter	GRAVIMETRIC, 105°C. METHOD	p. 535	–	p. 280	X.
TOTAL DISSOLVED (FILTERABLE) SOLIDS Mg/liter	GLASS FIBER FILTRATION METHOD, 180°C.	p. 539	–	p. 275	X.
TOTAL SUSPENDED (NON-FILTERABLE) SOLIDS Mg/liter	GLASS FIBER FILTRATION METHOD, 103-105°C.	p. 537	–	p. 278	X.
TOTAL VOLATILE SOLIDS Mg/liter	GRAVIMETRIC METHOD 550°C.	p. 536	–	p. 282	X.
AMMONIA (as N) Mg/liter	DISTILLATION-NESSLERIZATION METHOD OR TECHNICON-DIGESTION & PHENOLATE METHOD	p. 453	–	p. 134	.XX
KJELDAHL NITROGEN Mg/liter	DIGESTION-DISTILLATION METHOD OR TECHNICON-DIGESTION & PHENOLATE METHOD	p. 469	–	p. 149	.XX
NITRATE (as N) Mg/liter	BRUCINE SULFATE METHOD OR TECHNICON-HYDRAZINE REDUCTION METHOD	p. 461	–	p. 170	.XX
TOTAL PHOSPHORUS (as P) Mg/liter	PERSULFATE DIGESTION & SINGLE REAGENT METHOD OR TECHNICON-MANUAL DIGESTION & SINGLE REAGENT OR STANNOUS CHLORIDE	p. 526	–	p. 235	.XX

PART B DISCHARGE DESCRIPTION

(Note: Submission of Part B is required of all applicants who are also required to submit Part A. Only those parameters specifically indicated in the instructions are to be reported by a particular industry)

(Office use only) OCT 13 1971

071-0YA-2- 000139

Discharge Serial No. 001

B-1. PHYSICAL AND BIOLOGICAL PARAMETERS OF INTAKE WATER AND DISCHARGE (See Table B-1)

PARAMETER AND CODE	Intake: UNTREATED INTAKE WATER (1)	Intake: TREATED INTAKE WATER (2)	Discharge: AVERAGE (DAILY) (3)	Discharge: MINIMUM (OPERATING YEAR) (4)	Discharge: MAXIMUM (OPERATING YEAR) (5)	Discharge: SAMPLE FREQUENCY (6)	Discharge: CONTINUOUS MONITORING (7)
COLOR 00080	5		180	X	252	0	A
SPECIFIC CONDUCTANCE 00095	1		230		322	0	A
TURBIDITY 00070	<1		45	X	63	0	A
FECAL STREPTOCOCCI BACTERIA 31054				X			
FECAL COLIFORM BACTERIA 31055				X			
TOTAL COLIFORM BACTERIA 31056				X			

Sample frequency was once for those marked "0" in Column 6. These samples were analyzed and reported under average. Maximums were calculated as 1.4 times average values. Intake, average and maximum values are all in the required units.

ENG FORM 4345-1 JUN 71

Koppers022081

MAY 24 1972

(Office use only)

071-0YA-2-00018?

Discharge Serial No.

001

B-2. CHEMICAL PARAMETERS OF INTAKE WATER AND DISCHARGE (See Table B-2)

Int e		Discharge									
PARAMETER AND CODE	UNTREATED INTAKE WATER (1)	TREATED INTAKE WATER (2)	MAXIMUM CONCENTRATION (3)	MAXIMUM POUNDS PER DAY PER PROCESS UNIT (4)	MAXIMUM POUNDS PER DAY (5)	DAILY AVG. CONCENTRATION (6)	AVERAGE POUNDS PER DAY (7)	SAMPLE TYPE (8)	SAMPLE FREQUENCY (9)	METHOD OF ANALYSIS (10)	CONTINUOUS MONITORING (11)
AC ITY (as $CaCO_3$) 00 5	0.9		24	2.41X 10^{-5}	6.74	17	4.81	C	O	S	A
TO AL ORGANIC CA BON (T.O.C.) 00680											
TO AL HARDNESS 00900											
NI RITE (as N) 00615											
ORGANIC NITROGEN 00605											
PHOSPHORUS-ORTHO (as) 705 7											
SU FATE 00 5	0.45		9.8	9.91 X 10^{-6}	2.76	7	1.983	G	O	S	A
SU IDE 00 5	0.00045		0.0014	1.4 X 10^{-9}	0.00040	<0.001	0.00028	G	O	S	A
SU ITE 00740											
BROMIDE 71870											

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JUN 71

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71-0YA-2-000139

Discharge Serial No. 001

B-2. (cont.) CHEMICAL PARAMETERS OF INTAKE WATER AND DISCHARGE (See Table B-2)

PARAMETER AND CODE	Intake: UNTREATED INTAKE WATER (1)	Intake: TREATED INTAKE WATER (2)	Discharge: MAXIMUM CONCENTRATION (3)	MAXIMUM POUNDS PER DAY PER PROCESS UNIT (4)	MAXIMUM POUNDS PER DAY (5)	DAILY AVG. CONCENTRATION (6)	AVERAGE POUNDS PER DAY (7)	SAMPLE TYPE (8)	SAMPLE FREQUENCY (9)	METHOD OF ANALYSIS (10)	CONTINUOUS MONITORING (11)
CHLORIDE 00940	1.349		4.9	4.96 x 10^{-6}	1.388	3.5	0.991	C	O	S	A
CYANIDE 00720	<0.0045		<.028	3.0 x 10^{-7}	.0084	<0.02	.006	G	O	S	A
FLUORIDE 00951	0.018		0.35	3.54 x 10^{-7} -8	0.0991	0.25	0.0708	G	O	S	A
ALUMINUM-TOTAL 01105	0.054		310	3.12 x 10^{-7}	0.0872	220	0.0623	G	O	S	A
ANTIMONY-TOTAL 01097											
ARSENIC-TOTAL 01002											
BARIUM-TOTAL 01007											
BERYLLIUM-TOTAL 01012											
BORON-TOTAL 01022				micro grams							
CADMIUM-TOTAL 01027	0.00045		2.8	2.8 x 10^{-9}	0.00079	x	0.00057	G	O	S	A

EPA FORM 4345-1 JUN 71

OCT 1 8 1971

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071-0YA-2-000139

Discharge Serial No.
001

B 2. (cont.) CHEMICAL PARAMETERS OF INTAKE WATER AND DISCHARGE (See Table B-2)

PARAMETER AND CODE	Intake: UNTREATED INTAKE WATER (1)	Intake: TREATED INTAKE WATER (2)	Discharge: MAXIMUM CONCENTRATION (3)	Discharge: MAXIMUM POUNDS PER DAY PER PROCESS UNIT (4)	Discharge: MAXIMUM POUNDS PER DAY (5)	Discharge: DAILY AVG. CONCENTRATION (6)	Discharge: AVERAGE POUNDS PER DAY (7)	Discharge: SAMPLE TYPE (8)	Discharge: SAMPLE FREQUENCY (9)	Discharge: METHOD OF ANALYSIS (10)	Discharge: CONTINUOUS MONITORING (11)
CALCIUM-TOTAL 00916	0.765		25	2.53×10^{-5}	7.1	17.9	5.07	G	O	S	A
CHROMIUM-TOTAL 01034	0.0067	micro grams	74	7.51×10^{-8}	0.021	53	0.015	G	O	S	A
COBALT-TOTAL 01037	<0.00045	"	49	4.96×10^{-8}	0.0139	35	0.0099	G	O	S	A
COPPER-TOTAL 01042	0.009	"	133	1.34×10^{-7}	0.0377	95	0.0269	G	O	S	A
IRON-TOTAL 01045	0.099	"	1400	1.42×10^{-6}	0.396	1000	0.283	G	O	S	A
LEAD-TOTAL 01051	0.0067	"	2.8	2.8×10^{-9}	0.00079	2	0.00057	G	O	S	A
MAGNESIUM-TOTAL 00927	0.225	"	8	8.07×10^{-6}	2.26	5.7	1.614	G	O	S	A
MANGANESE-TOTAL 01055	0.081		14000	1.42×10^{-5}	3.96	10000	2.83	G	O	S	A
MERCURY-TOTAL 71900	<0.0022		1.4	1.4×10^{-9}	0.0004	<1	0.0003	C	O	S	A
MOLYBDENUM-TOTAL 01062											

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PART B

OCT - 5 1971

(Office use only)

071-0YA-2-000139

Discharge Serial No. 001

B-2. (cont.) CHEMICAL PARAMETERS OF INTAKE WATER AND DISCHARGE (See Table B-2)

PARAMETER AND CODE	Intake: UNTREATED INTAKE WATER (1)	Intake: TREATED INTAKE WATER (2)	Discharge: MAXIMUM CONCENTRATION (3)	Discharge: MAXIMUM POUNDS PER DAY PER PROCESS UNIT (4)	Discharge: MAXIMUM POUNDS PER DAY (5)	Discharge: DAILY AVG. CONCENTRATION (6)	Discharge: AVERAGE POUNDS PER DAY (7)	SAMPLE TYPE (8)	SAMPLE FREQUENCY (9)	METHOD OF ANALYSIS (10)	CONTINUOUS MONITORING (11)
NICKEL-TOTAL 01067											
POTASSIUM-TOTAL 00937	0.1349		3.1	3.12×10^{-6}	0.872	2.2	0.623	G	O	S	A
SELENIUM-TOTAL 01147											
SILVER-TOTAL 01077											
SODIUM-TOTAL 00929	0.72		20	1.98×10^{-5}	5.55	14	3.96	G	O	S	A
THALLIUM-TOTAL 01059											
TIN-TOTAL 01102											
TITANIUM-TOTAL 01152											
ZINC-TOTAL 01092	0.1574	micro grams	770	7.79×10^{-7}	0.218	550	0.1558	G	O	S	A
OIL AND GREASE 00550	0.135	milligrams	27	2.72×10^{-5}	7.61	19.2	5.44	C	O	S	A

Koppers022085

PART B

(Office use only) 071-0YA-2-000139

Discharge Serial No. 001

B-2. (cont.) **CHEMICAL PARAMETERS OF INTAKE WATER AND DISCHARGE (See Table B-2)**

Intake: (1) UNTREATED INTAKE WATER; (2) TREATED INTAKE WATER

Discharge: (3) MAXIMUM CONCENTRATION; (4) MAXIMUM POUNDS PER DAY PER PROCESS UNIT; (5) MAXIMUM POUNDS PER DAY; (6) DAILY AVG. CONCENTRATION; (7) AVERAGE POUNDS PER DAY; (8) SAMPLE TYPE; (9) SAMPLE FREQUENCY; (10) METHOD OF ANALYSIS; (11) CONTINUOUS MONITORING

PARAMETER AND CODE	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)
PHENOLS 32730	.000045	[illegible]	4300	4.39×10^{-6}	1.23	3100	0.878	C	O	S	A
SURFACTANTS 38260											
ALGICIDES* 74051											
CHLORINATED HYDROCARBONS* (EXCEPT PESTICIDES) 74052	A					A					
PESTICIDES* 74053											

*Name specific compound(s) and fill in the required data for each. Use extra blanks at the end of the form and the "Remarks" space as necessary.

Sample frequency was once for those marked "O" in Column 9. These samples were analyzed and reported as daily average concentration in Column 6. Maximum values were calculated as 1.4 times average values. Intake values are in lb/day. No TOC analyses are available because the independent laboratory doing the tests was not equipped torun them.

Koppers022086

PART B

OCT 8 1971

(Office use only)

071-0YA-2-000139

Discharge Serial No.

B-3. RADIOACTIVE PARAMETERS OF INTAKE WATER AND DISCHARGE (See Table B-3)

PARAMETER AND CODE	Intake: UNTREATED INTAKE WATER (1)	Intake: TREATED INTAKE WATER (2)	Discharge: AVERAGE (DAILY) (3)	Discharge: MINIMUM (OPERATING YEAR) (4)	Discharge: MAXIMUM (OPERATING YEAR) (5)	Discharge: SAMPLE FREQUENCY (6)	Discharge: CONTINUOUS MONITORING (7)
ALPHA-TOTAL 01501				X			
ALPHA COUNTING ERROR 01502				X			
BETA-TOTAL 03501				X			
BETA COUNTING ERROR 03502				X			
GAMMA-TOTAL 05501				X			
GAMMA COUNTING ERROR 05502				X			
TRITIUM-TOTAL 07000				X			
TRITIUM COUNTING ERROR 07001				X			

B-4. REMARKS

Koppers022087

PART B INTAKE CONCENTRATIONS

JUN 21 1972

Parameter	Intake Mg/l	Concentration $\mu g/l$	Other
Color			2.25 PCV
Specific Conductance			0.45 μ mhos
Turbidity			<0.45 JTU
Acidity	2		
Sulfate	<1		
Sulfide	<0.001		
Chloride	3		
Cyanide	<0.01		
Fluoride	0.04		
Aluminum		120	
Cadmium		1	
Calcium	1.7		
Chromium		15	
Cobalt		<1	
Copper		20	
Iron		220	
Lead		1	
Magnesium	0.5		
Manganese		180	
Mercury		<5	
Potassium	0.3		
Sodium	1.6		
Zinc		350	
Oil & Grease	0.3		
Phenol		<1	

State of Oregon
DEPARTMENT OF ENVIRONMENTAL QUALITY

INTEROFFICE MEMO

To: ~~REGilbert~~, LDPatterson, ~~RHH~~

Date: March 29, 1974

From: RJNichols

Subject: WQ - Koppers, Multnomah County

This is to document that the Koppers NPDES permit will be moved to July because at present the plant is not operating.

cc CKAshbaker
JSweeney

DEQ-18

SP*76314-340

~~FMB~~

RG Portland West

To R~~(S)~~ These analyses are going to be quite revealing to me. Some of these installations are discharging things per standards. EJW

June 30, 1971

IW3-0

Mr. P. W. Guth, Superintendent
Koppers Company, Inc.
7540 N.W. St. Helens Road
Portland, Oregon 97229

Dear Mr. Guth:

Reference is made to your letter of June 29, 1971, regarding certification by this Department to the U. S. Corps of Engineers that the discharges from your plant to the Willamette River will not violate applicable water quality standards.

The procedure worked out between the Corps and the Water Quality Office of the Federal Environmental Protection Agency provides for state certification after the application has been filed with the Corps and determined by WQO-EPA to be a completed and adequate application.

Upon such determination by WQO-EPA, state certification will be requested by the Federal agencies.

Very truly yours,

Ely J. Weathersbee
Deputy Director

EJW:lb

State of Oregon
DEPARTMENT OF ENVIROMENTAL QUALITY
RECEIVED
JUL 6 1971
PORTLAND DISTRICT OFFICE

KOPPERS

June 29, 1971

Department of Environmental Quality
State Office Building
1400 S. W. Fifth Avenue
Portland, Oregon 97201

Gentlemen:

Attached is a copy of the application for the Corps of Engineers permit. It is necessary to obtain certification from you prior to the Corps approving an application. Will you please forward the required certification to the District Engineer.

Very truly yours,

P. W. Guth

P. W. Guth, Superintendent
7540 N. W. St. Helens Road
Portland, Oregon 97229

KRC/PWG:mak

Attachment

cc: K. R. Caldwell
D. Eynon
D. L. O'Dell
B. K. Pospishil
T. Smith

State of Oregon
DEPARTMENT OF ENVIRONMENTAL QUALITY
RECEIVED
JUN 30 1971
WATER QUALITY CONTROL

FORM APPROVED
OMB NO. 49-R 0408

DEPARTMENT OF THE ARMY, CORPS OF ENGINEERS

APPLICATION FOR PERMIT TO DISCHARGE OR WORK IN NAVIGABLE WATERS AND THEIR TRIBUTARIES

SECTION I. GENERAL INFORMATION	1. State	Application Number (to be assigned by Corps of Engineers)
	O R	Div. Dist. Type Sequence No.

2. Name of applicant and title of signing official
Koppers Company, Inc.
R. E. Spatz - Vice President & Asst. General Manager - Organic Matls. Div.

3. Mailing address of applicant
Koppers Company, Inc.
1201 Koppers Building
Pittsburgh, Pennsylvania 15219

4. Name, address, telephone number and title of applicant's authorized agent for permit application coordination and correspondence.
Paul W. Guth, Plant Superintendent
7540 N.W. St. Helena Road
Portland, Oregon 97229

503-286-3681

NOTE TO APPLICANT: Refer to the pamphlet entitled "Permits for Work and Structures in and for Discharges or Deposits into Navigable Waters" before attempting to complete this form.

Required Information

a. All information contained in this application will, upon request, be made available to the public for inspection and copying. A separate sheet entitled "Confidential Answers" must be used to set out information which is considered by the applicant to constitute trade secrets or commercial or financial information of a confidential nature. The information must clearly indicate the item number to which it applies. Confidential treatment can be considered only for that information for which a specific written request of confidentiality has been made on the attached sheet. However, in no event will identification of the contents and frequency of a discharge be recognized as confidential or privileged information.

b. The applicant shall furnish such supplementary information as is required by the District Engineer in order to evaluate fully an application.

c. If additional space is needed for a complete response to any item on this form, attach a sheet entitled "Additional Information." Indicate on that sheet the item numbers to which answers apply.

d. Drawings required by items 20 and 21 should be attached to this application. Other papers which must be attached to this application include, if applicable, copies of a water quality certification or a written communication which describes water quality impact (see Item 22 and Item 10 of Section II below), the additional information sheet(s) in "c" above, and the confidential information sheet described in "a" above.

Fees

If any discharge or deposit is involved, an application fee of $100 must be submitted with this application. An additional $50 is required for each additional point of discharge or deposit.

Signature

a. If a discharge is involved, an application submitted by a corporation must be signed by the principal executive officer of that corporation or by an official of the rank of corporate vice president or above who reports directly to such principal executive officer and who has been designated by the principal executive officer to make such applications on behalf of the corporation. In the case of a partnership or a sole proprietorship, the application must be signed by a general partner or the proprietor. Other signature requirements are discussed in the pamphlet.

b. If no discharge is involved, an application may be signed by the applicant or his authorized agent.

Application is hereby made for a permit or permits to authorize the activities described herein. I certify that I am familiar with the information contained in this application, and that to the best of my knowledge and belief such information is true, complete, and accurate.

R. E. Spatz
Signature of Applicant

18 U.S.C. Section 1001 provides that:

Whoever, in any matter within the jurisdiction of any department or agency of the United States knowingly and wilfully falsifies, conceals or covers up by any trick, scheme, or device a material fact, or makes any false, fictitious or fraudulent statements or representations, or makes or uses any false writing or document knowing same to contain any false, fictitious or fraudulent statement or entry, shall be fined not more than $10,000 or imprisoned not more than five years, or both.

FOR CORPS OF ENGINEERS USE ONLY

Acronym name of applicant

Date received, form not complete
Date received, form complete but without certificate
Date received, form complete
Date of Cert./Ltr.
day mo yr

Are discharge structures Major? ☐ Minor? ☐ N/A? ☐

Date sent to EPA, form not complete
Date sent to EPA, NOAA, D/I, AEC, FPC in complete form
day mo yr

5. Date (Office use)

6 29 71
mo day yr

6. Check type of application: a. Original [X] b. Revision [ ]

7. Number of original application

8. Name of facility where discharge or construction will occur.

Koppers Company, Inc.
Northwest Plant

9. Full mailing address of facility named in item 8 above.

Koppers Company, Inc.
7540 N. W. St. Helena Road
Portland, Oregon 97229

10. Names and mailing addresses of all adjoining property owners whose property also adjoins the waterway.

Northwest Natural Gas Co.
7900 N.W. St. Helena Road
Portland, Oregon 97229

Rivergate Rock Products
7881 N.W. St. Helena Road
Portland, Oregon 97229

11. Check to indicate the nature of the proposed activity:
a. Dredging [ ] b. Construction [ ] c. Construction with Discharge [X] b. Discharge only [ ]

12. If activity is temporary in nature, estimate its duration in months.

If application is for a discharge:

13. List intake sources

Source	Estimated Volume in Million Gallons Per day or Fraction Thereof
Municipal or private water supply system	.034
Surface water body	
Ground water	
Other	

14. Describe water usage within the plant

Type	Estimated Volume in Million Gallons Per day or Fraction Thereof
Cooling water	.014
Boiler Feed water	.040
Process water	
Sanitary system*	.001
Other	

15. List volume of discharges or losses other than into navigable waters.

Type	Estimated Volume in Million Gallons Per day or Fraction Thereof
Municipal waste treatment system	
Surface containment	.002
Underground disposal	
Waste Acceptance firms	
Evaporation	.018
Consumption	

* Indicate number employees served per day 12

ENG FORM 4345
MAY 71

If structures exist, or dredging, filling or other construction will occur, the precise location of the activity must be described.

(Office use only)

a. Name the corporate boundaries within which the structures exist or the activity will occur.

16. State: Oregon 17. County: Muttnomak 18. City or Town: Portland

b. Name of waterway at the location of the activity

19. Willamette River

20. Maps and sketches which show the location and character of each structure or activity, including any and all outfall devices, dispersive devices, and non-structural points of discharge, must be attached to this application.

21. For construction or work in navigable waters for which a separate permit is sought under 33 U.S.C. 403, the character of each structure must be fully shown on detailed plans to be submitted with this application. Note on the drawings those structures for which separate discharge information (Section II of this form) has been submitted.

22. List all approvals or denials granted by Federal, interstate, State or local agencies for any structures, construction, discharges or deposits described in this application.

Type of document	Id. No.	Date	Issuing Agency
Letter	1 W 3-0	1-11-66	Oregon State Sanitary Authority

23. Check if facility existed or was lawfully under construction prior to April 3, 1970. [X]

24. If dredging or filling will occur:

State the type of materials involved, their volume in cubic yards, and the proposed method of measurement.

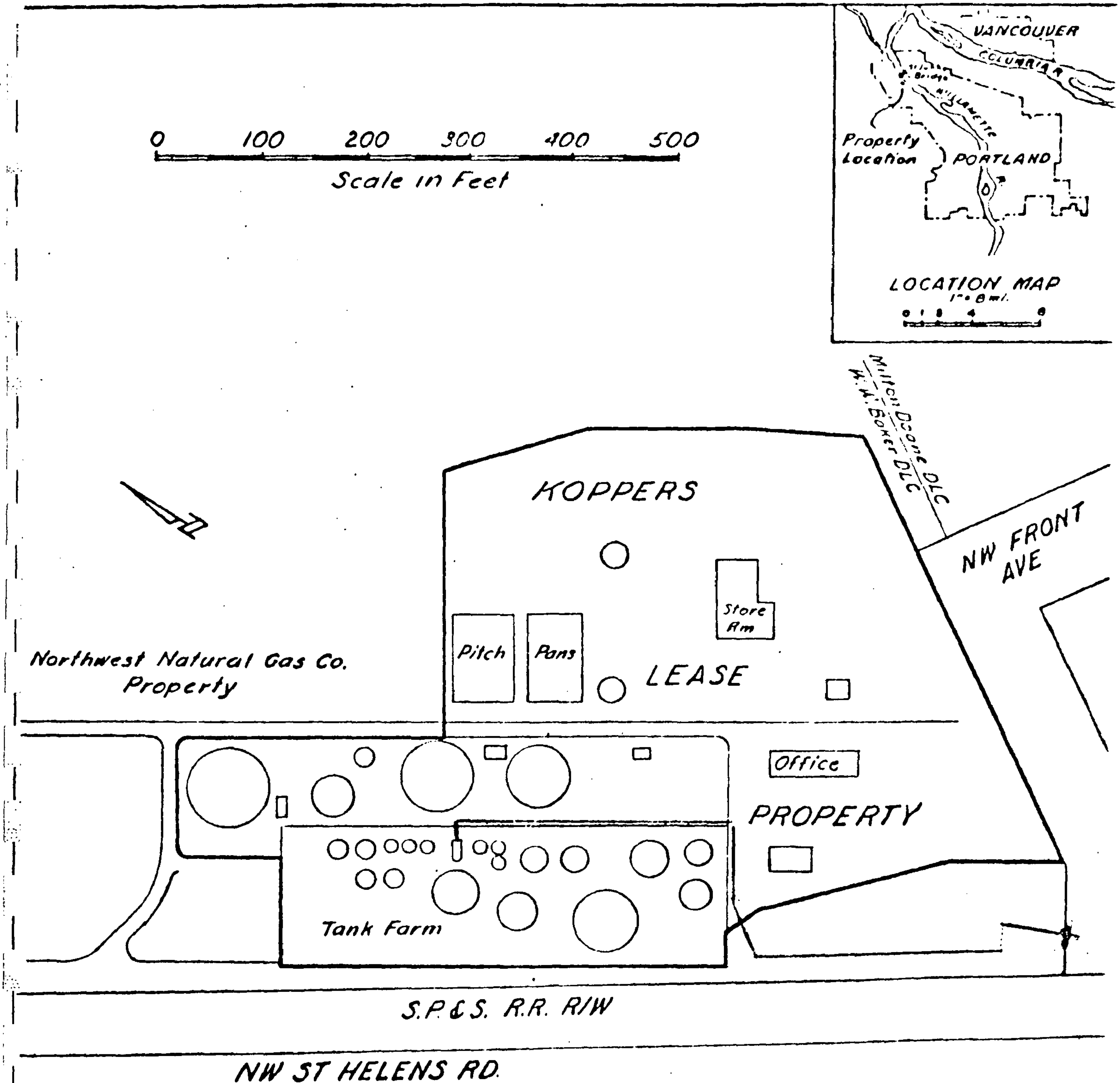
Not Applicable

25. Describe the proposed method of instrumentation which will be used to measure the volume of any solids which may be deposited and to determine its effect upon the waterway.

Not Applicable

26. State rates and periods of deposition described in Item 25.

Not Applicable



Location of Koppers Lease Property on Northwest Natural Gas Co. property at 7900 NW St Helens Rd., City of Portland, County of Multnomah, State of Oregon.

June 3, 1971

SECTION II. PLANT PROCESS AND DISCHARGE DESCRIPTION

1. Discharge described below is
   a. Present [X] b. Proposed new or changed [ ]

2. Implementation schedule [ ]

(Office use only)

Name of corporate boundaries within which the point of discharge is located.

State	County	City or Town	6. Discharge Serial No.
3. Oregon	4. Muttnomack	5. Portland	001

State the precise location of the point of discharge.

7. Latitude N 45 Degrees; 3 5 Min; ___ Sec.

8. Longitude W 122 Degrees; 4 6 Min; ___ Sec.

9. Name of waterway at the point of discharge.

Not applicable

10. Has application for water quality certification or description of impact been made? If so, give date:

Date: 6 (mo) 29 (day) 71 (yr)

Check if certificate is attached to form [ ]

Name Issuing Agency: Oregon Dept. of Environmental Quality

11. Narrative description of activity (include terms of general 4-digit Standard Industrial Classification, and specific manufacturing process).

Primarily engaged in manufacturing industrial organic chemicals by the distillation of coke oven tar.

12. Standard industrial classification number.

SIC 2818

13. Principal product.

See #15

14. Amount of principal product produced per day.

See #16

15. Principal raw material.

Coke Oven Tar

16. Amount of principal raw material consumed per day.

280,000 lbs.

17. Number of batch discharges per day.

Not Applicable

18. Average gallons per batch discharge.

Not Applicable

19. Date discharge began.

6 (mo) 1 (day) 66 (yr)

20. Date discharge will begin.

___ mo ___ day ___ yr

21. Describe waste abatement practices.

Water discharged at this outfall is contained in a separate drainage system where pumps with special seals and local separators are employed.

ESEPAR, EPUMPS, LOCALS

PHYSICAL DESCRIPTION OF INTAKE WATER AND DISCHARGE

Intake	Discharge	(Office use only)

Discharge Serial No. 001

Parameter and (Code)	UNTREATED INTAKE WATER (1)	TREATED INTAKE WATER (2)	AVERAGE (DAILY) (3)	MINIMUM (OPERATING YEAR) (4)	MAXIMUM (OPERATING YEAR) (5)	SAMPLE FREQUENCY (6)	CONTINUOUS MONITORING (7)
Flow (Gallons per day) 00056		54,000	34,000	Data Not Avail.	Data Not Avail.	OTHR	ABS
pH 00400		6.9	8.8	Data Not Avail.	Data Not Avail.	OTHR	ABS
Temperature (Winter) (°F) 74028		45	85	Data Not Avail.	Data Not Avail.	OTHR	ABS
Temperature (Summer) (°F) 74027		52	110	Data Not Avail.	Data Not Avail.	OTHR	ABS

23.

DISCHARGE CONTENTS

PARAMETER	PRESENT	ABSENT	PARAMETER	PRESENT	ABSENT	PARAMETER	PRESENT	ABSENT
Color 00080	X		Aluminum 01105		X	Nickel 01067		X
Turbidity 00070	X		Antimony 01097		X	Selenium 01147		X
Radioactivity 74050		X	Arsenic 01002		X	Silver 01077		X
Hardness 00900	X		Beryllium 01012		X	Potassium 00937	X	
Solids 00500	X		Barium 01007		X	Sodium 00929	X	
Ammonia 00610	X		Boron 01022		X	Titanium 01152		X
Organic Nitrogen 00605	X		Cadmium 01027		X	Tin 01102		X
Nitrate 00620	X		Calcium 00916	X		Zinc 01092		X
Nitrite 00615		X	Cobalt 01037		X	Algicides 74051		X
Phosphorus 00665	X		Chromium 01034		X	Oil and Grease 00550	X	
Sulfate 00945	X		Copper 01042		X	Phenols 32730	X	
Sulfide 00745	X		Iron 01045	X		Surfactants 38260		X
Sulfite 00740		X	Lead 01051		X	Chlorinated Hydrocarbons 74052		X
Bromide 71870		X	Magnesium 00927		X	Pesticides 74053		X
Chloride 00940	X		Manganese 01055		X	Fecal Streptococci Bacteria 74054		X
Cyanide 00720	X		Mercury 71900		X	Coliform Bacteria 74056		X
Fluoride 00951		X	Molybdenum 01062		X			

24a. H... all known hazardous or potentially hazardous substances in your plant been inventoried?

[ ] Yes [X] No

24b. If yes, have steps been taken to insure that there exists no possibility of any such known hazardous or potentially hazardous substance entering this discharge?

[ ] Yes [ ] No

25. Remarks. Principal Raw Material is used as process unit in Part A,Column 4. Item 24a. is checked NO even though we feel that we have such substances under control, because the question is too vague and all encompassing to answer yes comfortably. In Part A all maximum values are arbitrarily taken as 140% of the average in lieu of sufficient data. Part A information is based upon a 24 hour composite sample.

The information above completes the basic reporting requirements which are required of all applicants. Those applicants whose discharge results from an activity included within any of the Standard Industrial Classification Code (SIC Code) categories listed below must complete Part A of this form as well.

CRITICAL INDUSTRIAL GROUPS

SIC	098	FISH HATCHERIES, FARMS, AND PRESERVES
SIC	10-14	DIVISION B – MINING
SIC	201	MEAT PRODUCTS
SIC	202	DAIRY PRODUCTS
SIC	203	CANNED PRESERVED FRUITS, VEGETABLES (EXCEPT SEAFOODS, SIC 2031 AND 2036)
SIC	2031, 2036	CANNED AND CURED FISH AND SEAFOODS; FRESH OR FROZEN PACKAGED FISH AND SEAFOODS
SIC	204	GRAIN MILL PRODUCTS
SIC	206	SUGAR
SIC	207	CONFECTIONARY AND RELATED PRODUCTS
SIC	208	BEVERAGES
SIC	209	MISCELLANEOUS FOOD PREPARATIONS AND KINDRED PRODUCTS
SIC	22	TEXTILE MILL PRODUCTS
SIC	23	APPAREL AND OTHER FINISHED PRODUCTS MADE FROM FABRICS AND SIMILAR MATERIALS
SIC	242	SAWMILLS AND PLANING MILLS
SIC	2432	VENEER AND PLYWOOD
SIC	2491	WOOD PRESERVING
SIC	26	PAPER AND ALLIED PRODUCTS
SIC	281	INDUSTRIAL INORGANIC AND ORGANIC CHEMICALS (EXCEPT SIC 2818)
SIC	2818	INDUSTRIAL ORGANIC CHEMICALS
SIC	282	PLASTICS MATERIALS AND SYNTHETIC RESINS, SYNTHETIC RUBBER, SYNTHETIC AND OTHER MAN-MADE FIBERS, EXCEPT GLASS
SIC	283	DRUGS
SIC	284	SOAP, DETERGENTS, AND CLEANING PREPARATIONS, PERFUMES, COSMETICS, AND OTHER TOILET PREPARATIONS
SIC	285	PAINTS, VARNISHES, LACQUERS, ENAMELS, AND ALLIED PRODUCTS
SIC	2871	FERTILIZERS
SIC	2879	AGRICULTURAL PESTICIDES, AND OTHER AGRICULTURAL CHEMICALS, NOT ELSEWHERE CLASSIFIED
SIC	2891	ADHESIVES AND GELATIN
SIC	2892	EXPLOSIVES
SIC	29	PETROLEUM REFINING AND RELATED INDUSTRIES
SIC	3011, 3069	TIRES AND INNER TUBES; FABRICATED RUBBER PRODUCTS, NOT ELSEWHERE CLASSIFIED
SIC	3079	MISCELLANEOUS PLASTICS PRODUCTS
SIC	311	LEATHER TANNING AND FINISHING
SIC	32	STONE, CLAY, GLASS, AND CONCRETE PRODUCTS
SIC	331	BLAST FURNACES, STEEL WORKS, AND ROLLING AND FINISHING MILLS
SIC	332	IRON AND STEEL FOUNDRIES
SIC	333, 334	PRIMARY SMELTING AND REFINING OF NONFERROUS METALS; SECONDARY SMELTING AND REFINING OF NONFERROUS METALS
SIC	336	NONFERROUS FOUNDRIES
SIC	347	COATING, ENGRAVING, AND ALLIED SERVICES
SIC	35	MACHINERY, EXCEPT ELECTRICAL
SIC	36	ELECTRICAL MACHINERY, EQUIPMENT, AND SUPPLIES
SIC	37	TRANSPORTATION EQUIPMENT (EXCEPT SHIP BUILDING AND REPAIRING, SIC 3731)
SIC	3731	SHIP BUILDING AND REPAIRING
SIC	491	ELECTRIC COMPANIES AND SYSTEMS
SIC	493	COMBINATION COMPANIES AND SYSTEMS

PART A

(Note: Submission of Part A is required of all applicants whose processes are listed on page 3 above.)

(Office use only)

Discharge Serial No. 001

INFORMATION REQUIRED OF SPECIFIED INDUSTRIES

PARAMETER AND CODE	Intake: UNTREATED INTAKE WATER (DAILY AVG. CONCENTRATION) (1)	Intake: TREATED INTAKE WATER (DAILY AVG. CONCENTRATION) (2)	Discharge: MAXIMUM CONCENTRATION (3)	Discharge: MAXIMUM POUNDS PER DAY PER PROCESS UNIT (4)	Discharge: MAXIMUM POUNDS PER DAY (5)	Discharge: DAILY AVG. CONCENTRATION (6)	Discharge: AVERAGE POUNDS PER DAY (7)	Discharge: SAMPLE TYPE (8)	Discharge: SAMPLE FREQUENCY (9)	Discharge: METHOD OF ANALYSIS (10)	Discharge: CONTINUOUS MONITORING (11)
ALKALINITY (as $CaCO_3$) 00410		14	101	10×10^{-5}	28	72	20	COMP	OTHR	AWWA	ABS
B.O.D. 5-DAY 00310		Not Avail	112	11×10^{-5}	32	80	23	COMP	OTHR	AWWA	ABS
CHEMICAL OXYGEN DEMAND (C.O.D.) 00340		Not Avail	344	37×10^{-5}	105	246	75	COMP	OTHR	AWWA	ABS
TOTAL SOLIDS 00500		28	246	25×10^{-5}	70	176	50	COMP	OTHR	AWWA	ABS
TOTAL DISSOLVED SOLIDS 70300		26.8	162	16×10^{-5}	46	116	33	COMP	OTHR	AWWA	ABS
TOTAL SUSPENDED SOLIDS 00530		1.2	84	86×10^{-6}	24	60	17	COMP	OTHR	AWWA	ABS
TOTAL VOLATILE SOLIDS 00505		11.5	106	11×10^{-5}	31	76	22	COMP	OTHR	AWWA	ABS
AMMONIA (as N) 00610		Not Avail	7.98	81×10^{-7}	2.27	5.7	1.62	COMP	OTHR	AWWA	ABS
KJELDAHL NITROGEN 00625		Not Avail				Not Avail					ABS
NITRATE (as N) 00620		Not Avail	.71	75×10^{-8}	.21	.51	0.15	COMP	OTHR	AWWA	ABS
PHOSPHORUS TOTAL (as P) 00665		Not Avail	.42	46×10^{-8}	.13	.30	.09	COMP	OTHR	AWWA	ABS

TABLE A
Guide for Completion of Part A

PARAMETER & UNITS	METHOD	REFERENCES: STANDARD METHODS 13TH ED. 1971	REFERENCES: A.S.T.M. STANDARDS Pt. 23 1970	REFERENCES: W.Q.O. METHODS 1971	SIGNIFICANCE IN REPORTING DATA
ALKALINITY AS $CaCO_3$ Mg/liter	ELECTROMETRIC TITRATION TECHNICON METHYL ORANGE METHOD	p. 370	p. 154	p. 6	X.
B.O.D. 5-DAY Mg/liter	MODIFIED WINKLER METHOD OR PROBE METHOD	p. 489	p. 712	p. 15	X.
CHEMICAL OXYGEN DEMAND (C.O.D.) Mg/liter	DICHROMATE REFLUX METHOD	p. 495	–	p. 17	X.
TOTAL SOLIDS Mg/liter	GRAVIMETRIC, 105°C. METHOD	p. 535	–	p. 280	X.
TOTAL DISSOLVED (FILTERABLE) SOLIDS Mg/liter	GLASS FIBER FILTRATION METHOD, 180°C.	p. 539	–	p. 275	X.
TOTAL SUSPENDED (NON-FILTERABLE) SOLIDS Mg/liter	GLASS FIBER FILTRATION METHOD, 103-105°C.	p. 537	–	p. 278	X.
TOTAL VOLATILE SOLIDS Mg/liter	GRAVIMETRIC METHOD 550°C.	p. 536	–	p. 282	X.
AMMONIA (as N) Mg/liter	DISTILLATION-NESSLERIZATION METHOD OR TECHNICON-DIGESTION & PHENOLATE METHOD	p. 453	–	p. 134	.XX
KJELDAHL NITROGEN Mg/liter	DIGESTION-DISTILLATION METHOD OR TECHNICON-DIGESTION & PHENOLATE METHOD	p. 469	–	p. 149	.XX
NITRATE (as N) Mg/liter	BRUCINE SULFATE METHOD OR TECHNICON-HYDRAZINE REDUCTION METHOD	p. 461	–	p. 170	.XX
TOTAL PHOSPHORUS (as P) Mg/liter	PERSULFATE DIGESTION & SINGLE REAGENT METHOD OR TECHNICON-MANUAL DIGESTION & SINGLE REAGENT OR STANNOUS CHLORIDE	p. 526	–	p. 235	.XX

K45 TO: KCS

RCS

~~ESG~~

To: Portland dist

UNITED STATES
DEPARTMENT OF THE INTERIOR
FEDERAL WATER POLLUTION CONTROL ADMINISTRATION
NORTHWEST REGION

October 30, 1969

IN REPLYING ADDRESS:
REGIONAL OFFICE
ROOM 501 PITTOCK BLOCK
PORTLAND, OREGON 97205

State of Oregon
DEPARTMENT OF ENVIRONMENTAL QUALITY
RECEIVED
NOV 3 - 1969
OFFICE OF THE DIRECTOR

IW3-0

Mr. Clifford Comisky, District Counsel
U.S. Army Engineers, Portland District
P.O. Box 2946
Portland, Oregon 97066

Re: Pollution Incident - Koppers Chemical Co. (10-23-69)

Dear Mr. Comisky:

Attached for your review are copies of the U.S. Coast Guard report regarding a pollution case at Koppers Chemical Company.

Pending your evaluation of this case, we will withhold analyzing the samples collected during the incident. A copy of this letter and the attached report are being forwarded to the Department of Environmental Quality.

If any additional information is needed, please let us know.

Sincerely yours,

James C. Willmann

James C. Willmann
Sanitary Engineer

enclosure

cc: Mr. Kenneth Spies, Director
Department of Environmental Quality

Captain of the Port, USCG, Portland

Commander Henry Haugen, USCG

Mr. Leon Jourolman, Assistant Regional Solicitor

DEPARTMENT OF TRANSPORTATION
U. S. COAST GUARD
CG-3639 (Rev. 7-68)

REPORTS CONTROL SYMBOL OLE-2101

WATER POLLUTION (Check applicable violation(s))

☐ OIL POLLUTION ACT OF 1961 (Discharge of oil by vessels within prohibited zones of the high seas.)

☐ OIL POLLUTION ACT OF 1924 (Discharge of oil by vessels into navigable waters of the United States.)

☐ THE REFUSE ACT OF 1899 (Discharge of refuse by vessel or shore facility into any navigable waters of the United States.)

REPORTING UNIT	CG DISTRICT	DATE OF VIOLATION
U. S. COAST GUARD STATION PORTLAND, OREGON	13	23 OCTOBER 1969

SECTION I - VESSEL DATA

1. NAME OF VESSEL	2. OFFICIAL NUMBER	3. NATIONALITY
NOT APPLICABLE	NA	NA

4. TYPE OF VESSEL ☐ DRY CARGO ☐ TANKER ☐ TANK BARGE ☐ OTHER (Specify)	5. GROSS TONS	6. INTERNATIONAL CALL
NA	NA	NA

7. OWNERS (Name and address)	8. LOCAL AGENT (Name and address)
NA	NA

9. MASTER		10. CHIEF ENGINEER	
a. NAME AND ADDRESS (If available)	b. LICENSE NO.	a. NAME AND ADDRESS (If available)	b. LICENSE NO.
NA	NA	NA	

SECTION II - OIL RECORD BOOK DATA

1. REQUESTED RECORD BOOK FROM ☐ MASTER ☐ CHIEF ENGINEER	2. ☐ PROPERLY MAINTAINED ☐ IMPROPERLY MAINTAINED ☐ COULD NOT BE PRODUCED
NA	NA

SECTION III - SHORE FACILITY DATA

1. NAME AND ADDRESS OF COMPANY	2. TYPE OF FACILITY / 3. TYPE OF REFUSE
Koppers Chemical Co., Inc. 7540 N.W. St. Helens Road Portland, Oregon	2. Chemical Plant 3. Pitch dust

SECTION IV - POLLUTION DATA

1. PLACE OF POLLUTION (Local name or geographical coordinates)	2. TIME	3. ☐ EQUIPMENT FAILURE ☐ PERSONNEL FAILURE
Koppers Chemical Company 7540 N.W. St. Helens Rd., Portland, Ore.	0830T	Unknown

4. OPERATING PERSONNEL INVOLVED	5. DUTY	6. MARINERS LICENSE NUMBER (If any)	7. SIGNED STATEMENT ATTACHED
NA	NA	NA	NA
NA	NA	NA	NA

8. EMERGENCY MEASURES TAKEN TO REDUCE FIRE HAZARD	9. POLLUTANT
NA	Pitch Dust

SECTION V - POLLUTION SAMPLES (Include this information on label of sample)

1. SOURCES	2. TIME	3. DATES
A. Conveyor on pier, dropped on ground	A. 0755	A. 23 OCT 69
B. Willamette River	B. 0855	B. 23 OCT 69

4. NAME OF PERSON(S) TAKING SAMPLES	5. WITNESS(ES) TO TAKING SAMPLES
EN1 L. B. Poland, EN2 S. F. Holmes	CS1 C. (D) Hiscock, EN3 C. W. Grigsby III

PERSON REPORTING POLLUTION	WITNESS	SIGNED STATEMENT ATTACHED ☐ YES ☐ NO
EN1 Leland B. Poland, USCG USCG Station Portland	EN3 Steven M. Sanders, USCG USCG Station Portland	

INVESTIGATING OFFICER (Typed name)	SIGNATURE (Investigating Officer)
EN3 Steven M. Sanders, USCG	Steven M. Sanders

FIRST ENDORSEMENT

DATE	SIGNATURE (Unit Commanding Officer)
OCT 28 1969	RICHARD F. MALM, CDR, USCG

SECOND ENDORSEMENT

DATE	SIGNATURE (District Commander)

PREVIOUS EDITIONS ARE OBSOLETE

Fossum

0830 - While conducting a routine inspection of the M/V Fossum, BM1 Leland B. Poland and MM3 Steven M. Sanders noticed that a large area of water around Koppers Chemical Company was covered with pitch dust.

0835 - BM1 L. B. Poland informed Portland Station of the possible pollution.

0925 - CG-17163 departed moorings enroute to Koppers Chemical to investigate and to take samples.

0955 - The following samples were taken:

Sample #[illegible] - 400 yards down river from Koppers Chemical Co.
[illegible] - Around piers at Koppers Chemical Co.
[illegible] - 400 yards down river from Koppers Chemical Co.
2141 - Around piers at Koppers Chemical Co.
000184 - End of conveyor on pier.
000185 - Beginning of conveyor on beach.

Samples and a copy of this report forwarded to FWPCA on 28 October 1969.

RCS ~~RCS~~

FMB ~~BMB~~

NPPOC

7 November 1969

REG ~~REG~~

Koppers Chemical Co., Inc.
7540 N. W. St. Helens Road
Portland, Oregon

IW 3.0

Portland Dist

Gentlemen:

This office is in receipt of copy of a U. S. Coast Guard report concerning an incident occurring 23 October 1969, in which refuse in the nature of pitch dust was discovered entering the Willamette River adjacent to your plant.

The Refuse Act of 1899 expressly prohibits the discharge of any form of refuse from a shore facility into the navigable waters of the United States. The Willamette River is such a waterway.

It is requested that your office take prompt remedial action to prevent any recurrence of this type of pollution of our waters, and to advise in the near future as to the action you have undertaken. If a proper spirit of cooperation is shown, we probably will not invite prosecution by the U. S. Attorney's Office. Any recurrence, of course, would necessitate such a recommendation. Your prompt compliance would be appreciated.

Sincerely yours,

PAUL D. TRIEM
Lieutenant Colonel, CE
Deputy District Engineer

CC: KENNETH SPIES

Copy furnished:

Mr. Kenneth Spies, Director
Department of Environmental Quality

Captain of the Port, USCG, Portland

Commander Henry Haugen, USCG

Mr. Leon Jourolman, Assistant Regional Solicitor

VICTOR ATIYEH
GOVERNOR

Department of Environmental Quality

522 S.W. 5th AVENUE, P.O. BOX 1760, PORTLAND, OREGON 97207

~~TRG~~
~~SCC~~
~~DHB~~

DEC 14 1979

Koppers Company, Inc.
7540 Northwest St. Helens Road
Portland, OR 97229

Re: Waste Discharge Permit # 3077-J
File No. 47430

We have completed our review of your permit application and the comments received regarding the preliminary draft permit which was mailed to you for review on September 20, 1979.
and have issued the attached NPDES Waste Discharge Permit.

This permit will be considered as the final action on permit application number OR 100077-9.

Copies of monitoring report forms will be sent to you by our regional office under separate cover.

You are urged to carefully read the permit and take all possible steps to comply with the conditions contained therein so that our Oregon environment can be preserved. If you have questions regarding the permit, please contact this office.

Sincerely,

William H. Young

WILLIAM H. YOUNG
Director

CKA: pn
Attachment

cc: Northwest Region, DEQ

Dept. of Environmental Quality
RECEIVED
DEC 20 1979
NORTHWEST REGION

Contains Recycled Materials

DEQ-1

Permit Number: 3077J
Expiration Date: 11/30/84
File Number: 47430

NATIONAL POLLUTANT DISCHARGE ELIMINATION SYSTEM

WASTE DISCHARGE PERMIT
Department of Environmental Quality
522 Southwest Fifth Avenue, Portland, OR
Mailing Address: Box 1760, Portland, OR 97207
Telephone: (503) 229-5696

Issued pursuant to ORS 468.740 and The Federal Clean Water Act

ISSUED TO:

Koppers Company, Inc.
7540 Northwest St. Helens Road
Portland, OR 97229

SOURCES COVERED BY THIS PERMIT:

Type of Waste	Outfall Number	Outfall Location
Tank farm run-off and boiler blow-down	001	Willamette River
Noncontact cooling water	002	Willamette River

PLANT TYPE AND LOCATION:

Creosote Terminal
7540 Northwest St. Helens Road
Portland, OR 97229

RECEIVING STREAM INFORMATION:

Major Basin: Willamette
Minor Basin:
Receiving Stream: Willamette
County: Multnomah
Applicable
Standards: OAR 340-41-445

Issued in response to Application Number OR 100077-9 received June 21, 1979.

William H. Young
William H. Young, Director

DEC 14 1979
Date

PERMITTED ACTIVITIES

Until this permit expires or is modified or revoked, the permittee is authorized to construct, install, modify or operate a waste water collection, treatment, control and disposal system and discharge adequately treated waste waters in conformance with requirements, limitations, and conditions set forth in attached schedules as follows:

Page

Schedule A - Waste Discharge Limitations not to be Exceeded.....2
Schedule B - Minimum Monitoring and Reporting Requirements......3
Schedule C - Compliance Conditions and Schedules................-
Schedule D - Special Conditions.................................4
General Conditions..5

All other direct and indirect waste discharges to public waters are prohibited.

This permit does not relieve the permittee from responsibility for compliance with other applicable Federal, state, or local laws, rules, or standards.

Permit Number: 3077J
Expiration Date: 11/30/84
File Number: 47430

SCHEDULE A

1. Waste Discharge Limitations not to be Exceeded After Permit Issuance Date

Outfall Number 001

	Concentrations		Loadings	
	Monthly Ave. mg/l	Daily Max. mg/l	Monthly Ave. kg/day (lb/day)	Daily Max. kg/day (lb/day)
Oil & grease	10	15	-	-
Phenols	0.5	0.7	-	-

Other Parameters	Limitations
pH	Shall be outside the range 6.0 - 9.0
Temperature	Shall not exceed 43°C (110°F)

Outfall Number 002

Parameters	Limitations
Flow	Shall not exceed 38 m^3/day (10,000 GPD)
Temperature	Shall not exceed 27°C (80°F)

2. Notwithstanding the effluent limitations established by this permit, no wastes shall be discharged and no activities shall be conducted which will violate Water Quality Standards as adopted in OAR 340-41-445 except in the following defined mixing zone:

The allowable mining zone is defined as that portion of the Willamette River within 200 feet from the point of discharge.

Dept. of Environmental Quality
RECEIVED
DEC 20 1979
NORTHWEST REGION

Koppers022106

SCHEDULE B

Minimum Monitoring and Reporting Requirements (unless otherwise approved in writing by the Department)

Outfall Number 001, 002

Item or Parameter	Minimum Frequency	Type of Sample
Flow (001 & 002)	Daily	Estimate
Temperature (001 & 002)	Daily	Grab
pH (001)	Daily	Grab
Oil & Grease (001)	Weekly	Composite*
Phenols (001)	Monthly	Composite*

Reporting Procedures

Monitoring results shall be reported on approved forms. The reporting period is the calendar year. Reports must be submitted to the Department by January 15th of the following year.

*The composite sample shall consist of not less than three samples taken at regular intervals over an eight hour period.

SCHEDULE D

Special Conditions

1. Sanitary wastes shall be disposed of to the city of Portland municipal sewage system.

2. An adequate contingency plan for prevention and handling of spills and unplanned discharges shall be in force at all times. A continuing program of employee orientation and education shall be maintained to ensure awareness of the necessity of good inplant control and quick and proper action in the event of a spill or accident.

3. The flow rate of wastewater discharged through the oil-water separator shall not exceed the hydraulic design capacity of the separator.

4. No emulsifying agents or detergents shall be discharged into or otherwise be allowed to enter into the oil-water separator.

Koppers022107

GENERAL CONDITIONS

G1. All discharges and activities authorized herein shall be consistent with the terms and conditions of this permit. The discharge of any pollutant more frequently than or at a level in excess of that identified and authorized by this permit shall constitute a violation of the terms and conditions of this permit.

G2. Monitoring records:

a. All records of monitoring activities and results, including all original strip chart recordings for continuous monitoring instrumentation and calibration and maintenance records, shall be retained by the permittee for a minimum of three years. This period of retention shall be extended during the course of any unresolved litigation regarding the discharge of pollutants by the permittee or when requested by the Director.

b. The permittee shall record for each measurement or sample taken pursuant to the requirements of this permit the following information: (1) the date, exact place, and time of sampling; (2) the dates the analyses were performed; (3) who performed the analyses; (4) the analytical techniques or methods used; and (5) the results of all required analyses.

c. Samples and measurements taken to meet the requirements of this condition shall be representative of the volume and nature of the monitored discharge.

d. All sampling and analytical methods used to meet the monitoring requirements specified in this permit shall, unless approved otherwise in writing by the Department, conform to the Guidelines Establishing Test Procedures for the Analysis of Pollutants as specified in 40 CFR, Part 136.

G3. All waste solids, including dredgings and sludges, shall be utilized or disposed of in a manner which will prevent their entry, or the entry of contaminated drainage or leachate therefrom, into the waters of the state, and such that health hazards and nuisance conditions are not created.

G4. The diversion or bypass of any discharge from facilities utilized by the permittee to maintain compliance with the terms and conditions of this permit is prohibited, except (a) where unavoidable to prevent loss of life or severe property damage, or (b) where excessive storm drainage or runoff would damage any facilities necessary for compliance with the terms and conditions of this permit. The permittee shall immediately notify the Department in writing of each such diversion or bypass in accordance with the procedure specified in Condition G12.

G5. The issuance of this permit does not convey any property rights in either real or personal property, or any exclusive privileges, nor does it authorize any injury to private property or any invasion of personal rights, nor any infringement of Federal, State, or local laws, or regulations.

G6. Whenever a facility expansion, production increase, or process modification is anticipated which will result in a change in the character of pollutants to be discharged or which will result in a new or increased discharge that will exceed the conditions of this permit, a new application must be submitted together with the necessary reports, plans, and specifications for the proposed changes. No change shall be made until plans have been approved and a new permit or permit modification has been issued.

G7. After notice and opportunity for a hearing this permit may be modified, suspended, or revoked in whole or in part during its term for cause including but not limited to the following:

a. Violation of any terms or conditions of this permit or any applicable rule, standard, or order of the Commission;

b. Obtaining this permit by misrepresentation or failure to disclose fully all relevant facts;

c. A change in the condition of the receiving waters or any other condition that requires either a temporary or permanent reduction or elimination of the authorized discharge.

G8. If a toxic effluent standard or prohibition (including any schedule of compliance specified in such effluent standard or prohibition) is established under Section 307(a) of the Federal Act for a toxic pollutant which is present in the discharge authorized herein and such standard or prohibition is more stringent than any limitation upon such pollutant in this permit, this permit shall be revised or modified in accordance with the toxic effluent standard or prohibition and the permittee shall be so notified.

G9. The permittee shall, at all reasonable times, allow authorized representatives of the Department of Environmental Quality:

a. To enter upon the permittee's premises where an effluent source or disposal system is located or in which any records are required to be kept under the terms and conditions of this permit;

b. To have access to and copy any records required to be kept under the terms and conditions of this permit;

c. To inspect any monitoring equipment or monitoring method required by this permit; or

d. To sample any discharge of pollutants.

G10. The permittee shall maintain in good working order and operate as efficiently as practicable all treatment or control facilities or systems installed or used by the permittee to achieve compliance with the terms and conditions of this permit.

G11. The Department of Environmental Quality, its officers, agents, of employees shall not sustain any liability on account of the issuance of this permit or on account of the construction or maintenance of facilities because of this permit.

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G12. In the event the permittee is unable to comply with all the conditions of this permit because of a breakdown of equipment or facilities, an accident caused by human error or negligence, or any other cause such as an act of nature, the permittee shall:

a. Immediately take action to stop, contain, and clean up the unauthorized discharges and correct the problem.

b. Immediately notify the Department of Environmental Quality so that an investigation can be made to evaluate the impact and the corrective actions taken and determine additional action that must be taken.

c. Submit a detailed written report describing the breakdown, the actual quantity and quality of resulting waste discharges, corrective action taken, steps taken to prevent a recurrence, and any other pertinent information.

Compliance with these requirements does not relieve the permittee from responsibility to maintain continuous compliance with the conditions of this permit or the resulting liability for failure to comply.

G13. Definitions of terms and abbreviations used in this permit:

a. BOD means five-day biochemical oxygen demand.
b. TSS means total suspended solids.
c. mg/l means milligrams per liter.
d. kg means kilograms.
e. m^3/d means cubic meters per day.
f. MGD means million gallons per day.
g. Composite sample means a combination of samples collected, generally at equal intervals over a 24-hour period, and apportioned according to the volume of flow at the time of sampling.
h. FC means fecal coliform bacteria.
i. Averages for BOD, TSS, and Chemical parameters based on arithmetic mean of samples taken.
j. Average Coliform or Fecal Coliform is based on geometric mean of samples taken.

LP:o
PW4743.0

Koppers022109

DEPARTMENT OF ENVIRONMENTAL QUALITY

1234 S.W. MORRISON STREET • PORTLAND, ORE. 97205 • Telephone (503) 229-53

JUN 24 1975

WQ-

Koppers Company, Inc.
7540 N. W. St. Helens Road
Portland, Oregon 97229

Attention: Mr. Paul W. Guth, Plant Superintendent

Gentlemen:

Re: Waste Discharge Permit
File No. 47430

The Department of Environmental Quality has completed its review of your permit application and the comments received regarding the preliminary draft permit which was mailed to you for review on March 19, 1975 and has issued the attached NPDES Waste Discharge Permit.

In accordance with the requirements of regulations promulgated pursuant to the Federal Water Pollution Control Act Amendments of 1972 (P.L. 92-500) the Environmental Protection Agency has reviewed this NPDES permit and approved its issuance by letter dated June 19, 1975.

This permit will be considered as the final action on permit application number OR-000077-9.

Copies of NPDES monitoring report forms will be sent to you by our regional office under separate cover.

You are urged to carefully read the permit and take all possible steps to comply with the conditions contained therein so that our Oregon environment can be preserved. Any questions regarding the permit should be addressed to DEQ Portland Region, 1010 N. E. Couch Street, Portland, Oregon 97232, or telephone 238-8471.

Cordially,

KESSLER R. CANNON
Director

CKA:ak
Attachment

cc: Portland Region

COPY

DEQ-2

Permit Number: 2180-J
Expiration Date: 11/30/79
Page 1 of 7

NATIONAL POLLUTANT DISCHARGE ELIMINATION SYSTEM

WASTE DISCHARGE PERMIT

Department of Environmental Quality
1234 S. W. Morrison Street
Portland, Oregon 97205
Telephone: (503) 229-5696

Issued in accordance with the provisions of
ORS 449.083 (Recodified as 468.740)
and
Federal Water Pollution Control Act Amendments of 1972,
P.L. 92-500, Oct. 18, 1972 (33 U.S.C. § 1251 et seq.)
(Hereinafter referred to as the "Federal Act").

ISSUED TO:	REFERENCE INFORMATION
Koppers Company, Inc. 1201 Koppers Building Pittsburg, Pennsylvania 15219	File Number: 47430
	Appl. No.: Received OR-000077-9
PLANT SITE: 7540 N. W. St. Helens Road Portland, Oregon 97229	Major Basin: Willamette
	Minor Basin:
ISSUED BY THE DEPARTMENT OF ENVIRONMENTAL QUALITY	Receiving Stream: Willamette
	River Mile: 6.2
Kessler R. Cannon, Director — Date 6-23-75	County: Multnomah

PERMITTED ACTIVITIES

Until such time as this permit expires or is modified or revoked, Koppers Company, Portland Plant is herewith permitted to:

a. Construct, operate and maintain waste water control facilities.
b. Discharge treated tank farm runoff, treated contaminated storm runoff and boiler blowdown to the Willamette River.
c. Discharge uncontaminated cooling water and uncontaminated storm runoff to the Willamette River

All of the above activities must be carried out in conformance with the requirements, limitations and conditions which follow.

All other waste discharges are prohibited.

State of Oregon
Department of Environmental Quality
PERMIT CONDITIONS

Permit Number: 2180-J
Expiration Date: 11/30/79
Page 2 of 7

SPECIAL CONDITIONS

1. Prior to July 1, 1976, the permittee shall submit detailed engineering plans for providing, prior to July 1, 1977, such wastewater control facilities as are necessary to accomplish the following:

   a. Contain and treat all contaminated storm runoff to meet the effluent limitations specified in condition 5 of this permit.

   b. Treat all tank farm runoff and boiler blowdown to meet the effluent limitations specified in condition 5 of this permit.

2. The permittee is expected to meet the compliance schedules and interim dates which have been established in condition 1 of this permit. Either prior to or no later than 14 days following any lapsed compliance date the permittee shall submit to the Department a notice of compliance or non-compliance with the established schedule. The Director may revise a schedule of compliance if he determines good and valid cause resulting from events over which the permittee has little or no control.

3. Prior to constructing or modifying any waste water control facilities, detailed plans and specifications shall be approved in writing by the Department.

4. Beginning on the date of issuance of this permit and ending June 30, 1977, the quantity and quality of boiler blowdown and tank farm effluent discharged directly or indirectly to the Willamette River shall be limited not to exceed the following:

Parameter	Monthly Average	Daily Maximum
Oil and grease	20 mg/l	30 mg/l

Other Parameters	Limitations
pH	Shall not be outside the range 6.0 - 9.0
Temperature	Shall not exceed 110°F

5. Beginning July 1, 1977, the quantity and quality of treated boiler blowdown, tank farm runoff, and contaminated runoff shall be limited not to exceed the following:

Parameter	Monthly Average	Daily Maximum
Oil and Grease	10 mg/l	15 mg/l
Phenols	0.5 mg/l	0.7 mg/l

Other Parameters	Limitations
pH	Shall not be outside the range 6.0 - 9.0
Temperature	Shall not exceed 110°F

6. The quantity and quality of uncontaminated cooling water discharged to the Willamette River shall be limited not to exceed the following:

Parameter	Limitations
Flow	Shall not exceed 10,000 gpd
Temperature	Shall not exceed 80°F

Koppers022111

7. The flow rate of waste water discharged through the oil-water separator shall not exceed the hydraulic design capacity of the separator.

8. No emulsifying agents or detergents shall be discharged into or otherwise be allowed to enter the oil-water separator.

9. Notwithstanding the effluent limitations established by this permit, no wastes shall be discharged and no activities shall be conducted after June 30, 1977 which will violate Water Quality Standards as adopted in OAR 340-41-045 except in the following defined mixing zone:

   The allowable mixing zone is defined as that portion of the Willamette River within 200 feet from the point of discharge.

10. Sanitary wastes shall be disposed of to the City of Portland municipal sewerage system.

11. Unless approved otherwise in writing by the Department the permittee shall observe and inspect all waste handling, treatment and disposal facilities and the receiving stream above and below each point of discharge at least daily to insure compliance with the conditions of this permit. A written record of all such observations shall be maintained at the plant and shall be made available to the Department of Environmental Quality staff for inspection and review upon request.

12. The permittee shall monitor the operation and efficiency of all treatment and control facilities and the quantity and quality of the wastes discharged. A record of all such data shall be maintained and submitted to the Department of Environmental Quality at the end of each calendar month. Unless otherwise agreed to in writing by the Department of Environmental Quality, data collected and submitted shall include but not necessarily be limited to the following parameters and minimum frequencies:

Parameter	Source**	Minimum Frequency
Flow	001, 002	Daily estimate
Temperature	001, 002	Daily grab sample
pH	001	Daily grab sample
Oil and grease	001	Weekly composite sample*
Phenols	001	Monthly composite sample*

*The composite sample shall consist of three grab samples taken at regular intervals over an eight hour period.

**001 is the discharge which includes the tank farm runoff, boiler blowdown, and treated storm water effluents. 002 is the discharge which includes the uncontaminated cooling water effluent.

13. Within 30 days of the issuance of this permit the permittee shall submit a detailed description of the sampling procedures used, sample analysis techniques and exact location of sampling stations.

14. Prior to June 1, 1976, the permittee shall provide an alternative power source sufficient to operate all facilities utilized by the permittee to maintain compliance with the terms and conditions of this permit. In lieu of this requirement the permittee may certify in writing to the Department within 30 days of the issuance of the permit that in the event of a reduction, loss, or failure of a power source the permittee shall halt, reduce or otherwise control production and/or all discharges in order to maintain compliance with the terms and conditions of this permit.

15. The permittee shall prepare, submit to the Department and implement a suggested spill prevention and contingency plan for the facility covered by this permit within 90 days of the date of its issuance. Such plan shall include at least the following information and procedures relative to the prevention and handling of spills and unplanned discharges of oil, chemicals and other hazardous substances:

   a. A description of the reporting system which will be used to alert responsible facility management and appropriate legal authorities;

   b. A description of the facilities which prevent, contain or treat spills and unplanned discharges;

   c. A list of all oil and hazardous materials used, processed or stored at the facility which may be spilled and could conceivably be discharged to state waters;

   d. A brief description of recent spills and changes made to prevent their occurrence; and

   e. An implementation schedule for additional facilities which may be required to prevent the spillage of oil, chemicals and other hazardous materials and subsequent discharge to state waters.

16. The permittee shall, during all times of disposal, provide personnel whose responsibilities include assuring the continuous performance of the disposal system within the limitations of this permit.

Koppers022112

State of Oregon
Department of Environmental Quality
PERMIT CONDITIONS

Permit Number: 2180-J
Expiration Date: 11/30/79

GENERAL CONDITIONS

G1. All discharges and activities authorized herein shall be consistent with the terms and conditions of this permit. The discharge of any pollutant more frequently than or at a level in excess of that identified and authorized by this permit shall constitute a violation of the terms and conditions of this permit.

G2. Monitoring procedures:

a. Monitoring shall begin on the first day of the month following issuance of this permit.

b. Monitoring reports shall be submitted by the 15th day of each following month unless otherwise approved in writing by the Department.

c. Monitoring reports shall be submitted on approved NPDES report forms.

d. All records of monitoring activities and results, including all original strip chart recordings for continuous monitoring instrumentation and calibration and maintenance records, shall be retained by the permittee for a minimum of three years. This period of retention shall be extended during the course of any unresolved litigation regarding the discharge of pollutants by the permittee or when requested by the Director.

e. The permittee shall record for each measurement or sample taken pursuant to the requirements of this permit the following information: (1) the date, exact place and time of sampling; (2) the dates the analyses were performed; (3) who performed the analyses; (4) the analytical techniques or methods used and (5) the results of all required analyses.

f. Samples and measurements taken to meet the requirements of this condition shall be representative of the volume and nature of the monitored discharge.

g. All sampling and analytical methods used to meet the monitoring requirements specified in this permit shall, unless approved otherwise in writing by the Department, conform to the Guidelines Establishing Test Procedures for the Analysis of Pollutants as specified in 40 CFR, Part 136.

G3. All waste solids, including dredgings and sludges, shall be utilized or disposed of in a manner which will prevent their entry, or the entry of contaminated drainage or leachate therefrom, into the waters of the state and such that health hazards and nuisance conditions are not created.

State of Oregon
Department of Environmental Quality
PERMIT CONDITIONS

Permit Number: 2180-J
Expiration Date: 11/30/79

G4. The diversion or bypass of any discharge from facilities utilized by the permittee to maintain compliance with the terms and conditions of this permit is prohibited, except (a) where unavoidable to prevent loss of life or severe property damage or (b) where excessive storm drainage or runoff would damage any facilities necessary for compliance with the terms and conditions of this permit. The permittee shall immediately notify the Department in writing of each such diversion or bypass in accordance with the procedure specified in Condition G12.

G5. The issuance of this permit does not convey any property rights in either real or personal property, or any exclusive privileges, nor does it authorize any injury to private property or any invasion of personal rights, nor any infringement of Federal, State or local laws or regulations.

G6. Whenever a facility expansion, production increase or process modification is anticipated which will result in a change in the character of pollutants to be discharged or which will result in a new or increased discharge that will exceed the conditions of this permit, a new application must be submitted together with the necessary reports, plans and specifications for the proposed changes. No change shall be made until plans have been approved and a new permit or permit modification has been issued.

G7. After notice and opportunity for a hearing this permit may be modified, suspended or revoked in whole or in part during its term for cause including but not limited to the following:

a. Violation of any terms or conditions of this permit or any applicable rule, standard, or order of the Commission;

b. Obtaining this permit by misrepresentation or failure to disclose fully all relevant facts;

c. A change in the condition of the receiving waters or any other condition that requires either a temporary or permanent reduction or elimination of the authorized discharge.

G8. If a toxic effluent standard or prohibition (including any schedule of compliance specified in such effluent standard or prohibition) is established under Section 307(a) of the Federal Act for a toxic pollutant which is present in the discharge authorized herein and such standard or prohibition is more stringent than any limitation upon such pollutant in this permit, this permit shall be revised or modified in accordance with the toxic effluent standard or prohibition and the permittee shall be so notified.

G9. The permittee shall, at all reasonable times, allow authorized representatives of the Department of Environmental Quality:

a. To enter upon the permittee's premises where an effluent source or disposal system is located or in which any records are required to be kept under the terms and conditions of this permit;

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Koppers022114

b. To have access to and copy any records required to be kept under the terms and conditions of this permit;

c. To inspect any monitoring equipment or monitoring method required by this permit; or

d. To sample any discharge of pollutants.

G10. The permittee shall maintain in good working order and operate as efficiently as practicable all treatment or control facilities or systems installed or used by the permittee to achieve compliance with the terms and conditions of this permit.

G11. The Department of Environmental Quality, its officers, agents and employees shall not sustain any liability on account of the issuance of this permit or on account of the construction or maintenance of facilities because of this permit.

G12. In the event the permittee is unable to comply with all of the conditions of this permit because of a breakdown of equipment or facilities, an accident caused by human error or negligence, or any other cause such as an act of nature, the permittee shall:

a. Immediately take action to stop, contain and clean up the unauthorized discharges and correct the problem.

b. Immediately notify the Department of Environmental Quality so that an investigation can be made to evaluate the impact and the corrective actions taken and determine additional action that must be taken.

c. Submit a detailed written report describing the breakdown, the actual quantity and quality of resulting waste discharges, corrective action taken, steps taken to prevent a recurrence and any other pertinent information.

Compliance with these requirements does not relieve the permittee from responsibility to maintain continuous compliance with the conditions of this permit or the resulting liability for failure to comply.

DEPARTMENT OF ENVIRONMENTAL QUALITY

1234 S.W. MORRISON STREET • PORTLAND, ORE. 97205 • Telephone (503) 229-5696

May 2, 1975

Koppers Company, Inc.
Organic Materials Division
1201 Koppers Building
Pittsburgh, Pennsylvania 15219

Attention: Mr. Jon M. Anderson, Coordinator, Environmental Control

Re: W.Q. - Koppers
Multnomah County

Gentlemen:

Please find enclosed with this letter, a copy of the proposed National Pollutant Discharge Elimination System Waste Discharge Permit for the Koppers Company Plant in Portland, Oregon. The proposed permit has been revised due to the apparent decision by the City of Portland not to accept your wastewater in their sewerage system.

Please review the proposed permit and submit any comments you may have prior to May 23, 1975.

Should you have questions relative to this matter, please feel free to contact Mr. Dick Nichols in this office at 229-5309.

Very truly yours,

KESSLER R. CANNON
Director

Charles K. Ashbaker, Administrator
Water Pollution Control Division
Water Quality Program

RJN:bel

Enclosure

cc: Northwest Region, DEQ
EPA, Oregon Operations
Mr. Paul Guth

COPY

DE 2

PRELIMINARY DRAFT

FOR A

NATIONAL POLLUTANT DISCHARGE ELIMINATION SYSTEM PERMIT

TO BE ISSUED BY

OREGON DEPARTMENT OF ENVIRONMENTAL QUALITY

Pursuant to ORS 449.083 and P.L. 92-500

ISSUED TO: Koppers Company 1201 Koppers Building Pittsburg, Pennsylvania 15219 PLANT SITE: 7540 N. W. St. Helens Road Portland, Oregon 97229 ISSUED BY THE DEPARTMENT OF ENVIRONMENTAL QUALITY Kessler R. Cannon, Director — Date	REFERENCE INFORMATION File Number: 47430 Appl. No.: Received OR-000077-9 Major Basin: Willamette Minor Basin: Receiving Stream: Willamette River Mile: 6.2 County: Multnomah

PERMITTED ACTIVITIES

Until such time as this permit expires or is modified or revoked, Koppers Company, Portland Plant is herewith permitted to:

a. Construct, operate and maintain waste water control facilities.
b. Discharge treated tank farm runoff, treated contaminated storm runoff and boiler blowdown to the Willamette River.
c. Discharge uncontaminated cooling water and uncontaminated storm runoff to the Willamette River

All of the above activities must be carried out in conformance with the requirements, limitations and conditions which follow.

All other waste discharges are prohibited.

SPECIAL CONDITIONS

1. Prior to July 1, 1976, the permittee shall submit detailed engineering plans for providing, prior to July 1, 1977, such wastewater control facilities as are necessary to accomplish the following:

   a. Contain and treat all contaminated storm runoff to meet the effluent limitations specified in condition 5 of this permit.

   b. Treat all tank farm runoff and boiler blowdown to meet the effluent limitations specified in condition 5 of this permit.

2. The permittee is expected to meet the compliance schedules and interim dates which have been established in condition 1 of this permit. Either prior to or no later than 14 days following any lapsed compliance date the permittee shall submit to the Department a notice of compliance or non-compliance with the established schedule. The Director may revise a schedule of compliance if he determines good and valid cause resulting from events over which the permittee has little or no control.

3. Prior to constructing or modifying any waste water control facilities, detailed plans and specifications shall be approved in writing by the Department.

4. Beginning on the date of issuance of this permit and ending June 30, 1977, the quantity and quality of boiler blowdown and tank farm effluent discharged directly or indirectly to the Willamette River shall be limited not to exceed the following:

Parameter	Monthly Average	Daily Maximum
Oil and grease	20 mg/l	30 mg/l

Other Parameters	Limitations
pH	Shall not be outside the range 6.0 - 9.0
Temperature	Shall not exceed 110°F

5. Beginning July 1, 1977, the quantity and quality of treated boiler blowdown, tank farm runoff, and contaminated runoff shall be limited not to exceed the following:

Parameter	Monthly Average	Daily Maximum
Oil and Grease	10 mg/l	15 mg/l
Phenols	0.5 mg/l	0.7 mg/l

Other Parameters	Limitations
pH	Shall not be outside the range 6.0 - 9.0
Temperature	Shall not exceed 110°F

6. The quantity and quality of uncontaminated cooling water discharged to the Willamette River shall be limited not to exceed the following:

Parameter	Limitations
Flow	Shall not exceed 10,000 gpd
Temperature	Shall not exceed 80°F

7. The flow rate of waste water discharged through the oil-water separator shall not exceed the hydraulic design capacity of the separator.

8. No emulsifying agents or detergents shall be discharged into or otherwise be allowed to enter the oil-water separator.

9. Notwithstanding the effluent limitations established by this permit, no wastes shall be discharged and no activities shall be conducted after June 30, 1977 which will violate Water Quality Standards as adopted in OAR 340-41-045 except in the following defined mixing zone:

    The allowable mixing zone is defined as that portion of the Willamette River within 200 feet from the point of discharge.

10. Sanitary wastes shall be disposed of to the City of Portland municipal sewerage system.

11. Unless approved otherwise in writing by the Department the permittee shall observe and inspect all waste handling, treatment and disposal facilities and the receiving stream above and below each point of discharge at least daily to insure compliance with the conditions of this permit. A written record of all such observations shall be maintained at the plant and shall be made available to the Department of Environmental Quality staff for inspection and review upon request.

12. The permittee shall monitor the operation and efficiency of all treatment and control facilities and the quantity and quality of the wastes discharged. A record of all such data shall be maintained and submitted to the Department of Environmental Quality at the end of each calendar month. Unless otherwise agreed to in writing by the Department of Environmental Quality, data collected and submitted shall include but not necessarily be limited to the following parameters and minimum frequencies:

Parameter	Source**	Minimum Frequency
Flow	001, 002	Daily estimate
Temperature	001, 002	Daily grab sample
pH	001	Daily grab sample
Oil and grease	001	Weekly composite sample*
Phenols	001	Monthly composite sample*

*The composite sample shall consist of three grab samples taken at regular intervals over an eight hour period.

**001 is the discharge which includes the tank farm runoff, boiler blowdown, and treated storm water effluents. 002 is the discharge which includes the uncontaminated cooling water effluent.

13. Within 30 days of the issuance of this permit the permittee shall submit a detailed description of the sampling procedures used, sample analysis techniques and exact location of sampling stations.

14. Prior to June 1, 1976, the permittee shall provide an alternative power source sufficient to operate all facilities utilized by the permittee to maintain compliance with the terms and conditions of this permit. In lieu of this requirement the permittee may certify in writing to the Department within 30 days of the issuance of the permit that in the event of a reduction, loss, or failure of a power source the permittee shall halt, reduce or otherwise control production and/or all discharges in order to maintain compliance with the terms and conditions of this permit.

15. The permittee shall prepare, submit to the Department and implement a suggested spill prevention and contingency plan for the facility covered by this permit within 90 days of the date of its issuance. Such plan shall include at least the following information and procedures relative to the prevention and handling of spills and unplanned discharges of oil, chemicals and other hazardous substances:

    a. A description of the reporting system which will be used to alert responsible facility management and appropriate legal authorities;

    b. A description of the facilities which prevent, contain or treat spills and unplanned discharges;

    c. A list of all oil and hazardous materials used, processed or stored at the facility which may be spilled and could conceivably be discharged to state waters;

    d. A brief description of recent spills and changes made to prevent their occurrence; and

    e. An implementation schedule for additional facilities which may be required to prevent the spillage of oil, chemicals and other hazardous materials and subsequent discharge to state waters.

16. The permittee shall, during all times of disposal, provide personnel whose responsibilities include assuring the continuous performance of the disposal system within the limitations of this permit.